Report
Provincial Board of Health
Ontario
1904

WISCONSIN
STATE BOARD OF HEALTH
LIBRARY

THE

SANITARY JOURNAL

OF THE

Provincial Board of Health

Of Ontario

(Canada)

being the

TWENTY-THIRD ANNUAL REPORT

for the year

1904

PRINTED BY ORDER OF

THE LEGISLATIVE ASSEMBLY FOR ONTARIO

Toronto:
Printed and Published by L. K. CAMERON
Printer to the King's Most Excellent Majesty
1904

Warwick Bro's & Rutter, Limited,
Printers, Toronto.

PROVINCIAL BOARD OF HEALTH

Minister in Charge of the Department

Hon. W. J. Hanna,
Provincial Secretary.

Chairman

E. E Kitchen, M.D. - - - - -	St. George

Members

W. Oldright, M.D. - - - - -	Toronto
J. J. Cassidy, M. D. - - - -	"
W. J. Douglas, M.D. - - - - -	Cobourg
R P. Boucher, M.D. - - - - -	Peterborough
Alex. Thompson, Sr., M D. . - - - - - -	Strathroy
Chas. A. Hodgetts, M D., (Secretary) - - - -	Toronto

Bacteriologist in charge of the Laboratory

John A. Amyot, M.D.

CONTENTS

Parts I and II

PAGE

1. Introduction 5
2. Annual Address of Chairman—Dr. E. E. Kitchen 6
3. Secretary's Report—1st quarter 9
4. Reports of Committees { No. 1 Committee on Legislation 12
   { No. 1 Committee on School Hygiene 12
5. Report of Judge Mactavish *re* Ottawa Isolation Hospital 13
6. Relative Prevalence of Contagious Diseases in Children of School Age—Dr. P. H. Bryce 16
7. How to Prevent Outbreaks of Infectious Diseases, etc.—Dr. Chas. Sheard 20
8. The Place of the Teacher as an Instructor of Hygiene—Principal Wm. Scott 23
9. The Necessity of Physical Education, etc.—Dr. C. A. Hodgetts 27
10. Secretary's Report—2nd quarter 31
11. Laboratory Report—Dr. J. A. Amyot 36
12. Reports of Committee—Sewerage No. 1. Oshawa System 40
    2. Port Hope System 41
    3. Berlin System 42
    4. Brown House, Aylmer 42
    Epidemics No. 1. *re* Typhoid and Tuberculosis 43
13. Reports of Contagious Diseases for Six Months ending June 30th, 1904 47
14. Circular *re* Non-notification of Typhoid Fever 48
15. Interpretation of an Ordinary Water Analysis for Hygenic Purposes—John A. Amyot, M.D. 49

Parts III and IV

Frontispiece. The First Smallpox Patient in Temiskaming District. PAGE

1. A Study of Immunity in Variola and Vaccinia—C. A. Hodgetts, M.D. 55
2. Third Quarterly Report of Secretary 59
3. Laboratory Report---J. A. Amyot, M.D. 65
4. " " on Foods---G. G. Nasmith, M.A., Ph.D. 68
5. Report on Smallpox in Temiskaming District—J. A. Amyot, M.D. 72

PAGE

6. Reports of Committee on "Sewerage" (approved at Third quarterly meeting) 76
No. 5. Stratford 76
No. 6. Walker House, Kincardine 76
No. 7. Toronto. *re* Trunk Sewer 77
No. 8. Bridgeburg 77
No. 9. Wiarton 78
No. 10. Collingwood 78
No. 11. Ottawa East 79
7. Reports of Committee on "Public Water Supplies" (approved at Third quarterly meeting) 79
No. 1. Oshawa 79
No. 2. Creemore 79
No. 3. Grimsby 80
8. Report of Special Committee *re* Diploma of Public Health 80
9. Report of Nineteenth Annual Meeting. Association of Executive Health Officers of Ontario 81
10. Some of the questions regarding the new Health Regulations—C. R. Charteris, M.D., Chatham 83
11. The Home Treatment of the Consumptive.—Chas. A. Hodgetts, M.D. 84
12. Spinal Deformity—E. Oliver., M.D, Sarnia 86
13. Is the Dust Nuisance the chief cause of the spread of the Common Contagious Diseases? —J. J. Cassidy., M.D. 90
14. Diphtheria and its Treatment.—W. Logie, M.D., Sarnia 95
15. A study of Mechanical Filtration of Water—W. T. Connell, M.D., Kingston 101
16. The Public Health Aspects of European Immigration to Canada—P. H. Bryce, M.D., Ottawa 104
17. Patent Medicines, Drug Foods and Fake Drugs—G. G. Nasmith, M. A., Ph.D. 113
18. Suggestions on Sanitary Condition in Factories etc.—Thos Keilty, Toronto 117
19. A perfect Sewerage System for Rural Houses, Schools and Factories—M. J. Quinn, Toronto 120
20. Fourth Quarterly Report of Secretary 125
21. Special Report of Contagious Diseases—G. B. Lindsay 131
22. Laboratory Report—J. A. Amyot, M.D 133
23. Laboratory Report of Chemist. "Patent Medicines and Malt Extracts"—G. Nasmith, M.A., Ph.D. 139
24. Report on Sanitary Condition of the Muskoka and Kawartha Lake Districts—Drs. Hodgetts and Amyot 142
25. Report of Typhoid outbreak at North Bay—C. A. Hodgetts, M.D. 150
26. Report of Delegates to International Congress on Tuberculosis, St. Louis—Drs. Kitchen and Boucher 152
27. Report (No. 2.) Committee on "Epidemics" 155

28. Reports of Committee on "Sewerage." Approved at Fourth Quarterly Meeting.... 157
No. 12. Collingwood 157
No. 13. Palmerston 159
No. 15. Wiarton 160
No. 16. Rat Portage, ... 162
No. 17. Port Hope 164
No. 18. Stratford 165
No. 19. Galt 166
No. 20. Palmerston Pork Packing Co. Sewage 159
No. 21. Tillsonburg Nuisance 163
29. Reports of Committee on "Public Water Supplies." Approved at Fourth Quarterly Meeting 169
No. 4. Grimsby 169
No. 5. Thamesville..... 170
No. 6. North Bay..... 171
No. 7. East Toronto..... 172

THE SANITARY REPORTS.

OF THE PROVINCIAL BOARD OF HEALTH
OF ONTARIO, CANADA

VOL. XXIII. PARTS I. and II.

Introduction.

The Provincial Board of Health has pleasure in stating that through the kindly approval of the Honorable J. R. Stratton, Provincial Secretary, it will hereafter publish the Annual Report in four numbers, which will appear as far as possible in the months of March, June, September and December.

The publication of the Reports of Committees, of the Secretary, and the Officers of the Board at as early a date as possible after their presentation to the Board will, it trusts, be appreciated both by the medical profession and the public generally, for heretofore the only means at the disposal of the Board whereby reports could reach them was through the press of the Province, which at all times has shown itself both ready and willing to give freely of its columns where public health questions were concerned.

The necessity for the official report following this wide range of advertising at as early a date as possible has impressed itself on the Board, and it is hoped this new departure will do much to advance the cause of Public Sanitation and Hygiene in Ontario.

In future the Monthly Bulletin will be discontinued, also the Report of the Executive Health Officers' Association, both being incorporated in the Sanitary Reports, the papers read before the Association appearing as appendices, and continued throughout the year.

The laboratory reports will be prepared by Dr. J. A. Amyot, Bacteriologist of the Board, and the editing and publication have been placed by the Board in the hands of the Chairman and Secretary.

C. A. H.

Chairman's Annual Address.

By E. E. KITCHEN, M.D., St. George.

Delivered at the Quarterly Meeting, Held February 3rd, 1904.

At this, our first quarterly meeting for 1904, we find the greatest change in the personnel of the Board that has taken place during its existence. During the past year Dr. Vaux, our respected and gentlemanly Chairman, resigned his position and retired from the Board. Through continued ill-health Dr. McCulloch was forced to retire and take up his home in a better clime, and now our old and faithful Secretary presides at his accustomed desk for the last time. Dr. Bryce entered upon his duties as Secretary of the Provincial Board of Health at its inception, and has been most closely identified with it. The splendid work which he has done for sanitation in this fair province is difficult to estimate, even by those who have worked with him for years. The country has reaped the rewards of over 20 years of the best portion of his life, and I am bold to say that no more lasting monument will he ever have than the result of his Reports and daily work in this wide field. He now goes to Ottawa to fill a still more important and larger position in this Dominion, and he may rest assured that he carries with him the heartfelt wishes that success and happiness may ever follow him, of every member of this Board. Dr. Hodgetts, our late Inspector, who has for a long time been a valued official, is Dr. Bryce's successor, and I am sure no more satisfactory appointment could have been made. Our new members, Dr. Boucher and Dr. Thompson, have already entered upon their duties, and have already created the impression on the older members that their intelligence and gentlemanly conduct will make them valued members in the near future. To them, and to Dr. Hodgetts, we extend the glad hand, and hope that the same attention to duty and kindly feeling toward all and each member will prevail in the future as it has done in the past.

This Board has now been over twenty-one years in existence, and when it is considered that at its inception in 1882 very little had been done in the matter of sanitation, the rapid strides which have been made since that time have been remarkable. True, in 1815 a medical board had been established in Upper Canada, but mainly for the granting of licenses, and then in 1832, when cholera first invaded our shores, a Sanitary Commission was formed, which a few months afterwards gave way to the establishment of a Board of Health. When cholera re-visited us in 1849, and again in 1854 and 1866, a Central Board was established, but its duties were chiefly for quarantine and a few ordinary regulations for cleanliness.

During the first two years of this Board's establishment its duties were mainly of an advisory nature, and it was not until the end of 1883 that fifty Local Boards were established, and it was not until 1884 that the Public Health Act was passed, and then the result of the Board's labors were visible to the public eye. Since then great strides have been made in the formation of waterworks, sewerage systems, suppressions of contagious diseases, and many other matters, so that to-day Ontario holds a foremost place in every department which goes to make up a healthy home for every class of people. To show the great change during these twenty years, I would state that in 1882 this province had but twelve public water supplies, while now it has over 125, established at a cost of $12.000.000. In the former year only seven systems of sewage had been established, while now over sixty are in existence. There are 777 municipalities in the Province and of these 755 Local Boards

send in their reports, while in 1882 there were no Municipal Local Boards in existence.

During the year 1903 the health of the Province has been fair, and I will only trouble you with a few of the leading contagious diseases. Scarlet fever was more prevalent during the months of January, February, and March, having in each month 90, 104, and 95 deaths, respectively, while the least number of deaths occurred in September, October, and November, being 6, 9, and 9, respectively, while December only had 20, making for the year a total of 529 deaths.

In Diphtheria we had the greatest number of deaths in October, November and December, being 66, 64, and 71, respectively, while the Month of May had 23, March and August each 24, and June 26, making during the whole year 478 deaths. The largest mortality from Typhoid Fever was in September, 37; October, 43; November, 30, while the smallest was in May, 22, June, 13, and July, 18, making a total for the year of 298 deaths, the smallest in many years.

The largest number of deaths from Tuberculosis was in March, 221; April, 195; May, 232; while the smallest was in July, 139; November, 137, and August, 147, making a total for the year of 2,072, a much less mortality than we have ever had. The Government has taken a valuable step in offering a stated sum to each municipality which will undertake the establishment of a sanitorium for consumptive persons. To show that the public is interested in the matter, I have but to refer to the recent vote of the City of Toronto of $50,000 for such a purpose. Pure air, nourishing food, proper exercise, and good drainage go far to assist the tubercular patient in his early and incipient stage to recover his good health of former years.

Smallpox has given a great deal of trouble for the past few years, largely owing to the mildness of the type, thus causing many who were not aware of their ailment to come in contact with the public. The large numbers of cases which were reported in 1902, greatly increased in 1903, so that while in January we had some 198 cases, only 5 were reported in November and 13 in December, and these were brought from infected Dakota. It is passing strange that a prevalent disease like smallpox should still be allowed to infect our citizens. Germany, the only country that enacts vaccination, has stamped this vile disease completely out, and still it is allowed to go on in free America, causing deaths, disarranging business, and depleting public and private pockets. In the late invasion at Galt, where they had 80 cases and 8 deaths, it cost $11,000. If the regulations of the last year were properly carried out, this disease would soon be of the past. A pleasing feature is the manner in which the lumbermen of the unorganized districts are working in harmony with our Inspector, the companies and their men bearing all the expense, and all friction has ceased since the passing of our Regulation 12, as amended last year.

Two outbreaks of smallpox and one of diphtheria include all the cases for the past year that the Province was liable, and that amounted to $1,100.

It may not be out of place now to note the large increase of Isolation Hospitals, and as they may be so cheaply erected, and two or more municipalities may join in the expense, there is no reason why all parts of the Province should not be properly supplied. That an isolation hospital should not be used for more than one contagious disease has been the subject of judicial examination at Ottawa. Judge MacTavish remarks: "It is quite clear that the ideal hospital, for the reception and treatment of infectious diseases, should be not merely in separate buildings, but in buildings separated by as long a distance as possible, with separate administration, separate dispensary, and separate laboratories for pathological experiments."

During the past year new regulations have been issued as to Diphtheria, and Scarlet Fever, which are very important. The Committee on Epidemics have examined very carefully re Hygiene of Barber Shops, and handed in to the Board a splendid report which meets largely with the approbation of the barbers, and which, if carried into effect carefully, cannot but prevent the spreading of many a contagious disease. Likewise careful reports upon tent wards, construction camps, and hospitals, smallpox in Essex, scarlatina in Port Hope and in Rodney, diphtheria in Darlington, Whitby waterworks, as well as Gananoque, pollution of Grand River, Port Hope sewerage system, and many other important reports, for which there is not sufficient time even to name.

Very satisfactory reports have been sent in by the cities, from which it is learned that the death rate ranges from 11, the lowest, to 19, the highest, in the thousand. They are all alive to the necessity of good water and sewerage, and are increasing these works, and filling up their wells and cesspools.

An important amendment to the Public Health Act, assented to June 12th, 1903, has not been made so public as it should have been. It is to the effect that a Medical Health Officer may enter tenement and lodging houses and laundries, when overcrowded and filthy, and act accordingly.

A great deal of time has been spent in making perfect an Act for the introduction of County Medical Health Officers.

The Medical Health Officers are pretty well convinced that a Biological laboratory is necessary in every county town, so that microscopical and chemical examinations may be made as early as possible. The Biological Department of the Board, which was established in 1890, has done very valuable work for the Province, and the many increased calls upon it from year to year show the very important part this department plays, not only in connection with bacterial diseases in man, but also in animals. The new and commodious quarters, and the splendid equipments, place this department in so enviable a position that it is doubtful if there is anything superior to it in America.

A resolution was passed at our last meeting in 1903 directing its Committees on School Hygiene to undertake an investigation of the sanitary condition of the schools of the Province, with a view to obtaining information which would be of assistance in having any defects in existing conditions improved. Our Board proposes to conduct a series of experiments, bacteriological and chemical, upon the air of schools, and thus determine by experiment what systems of ventilation are proving most efficient. For this purpose the Hon. Mr. Harcourt was approached, who readily saw the good which would accrue from such a course, and called a meeting for February 2nd, and invited a number of gentlemen to give papers on special subjects bearing on the matter under consideration. There is nothing to-day which would add more to the health and financial condition of the people than matters like this and a few others, such as an improvement in the sanitary condition of our dairies, etc.

The people generally are yearly becoming more intelligent in such matters, and we fondly hope that the near future will do away with many conditions which now really exist, and which a continuous educating influence will finally supercede.

All of which is respectfully submitted.

(Sgd.) E. E. Kitchen,
Chairman.

February 3rd, 1904.

First Quarterly Report of Secretary (1904).

C. A. HODGETTS, M.D.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—Before presenting this, my first report as Secretary since my appointment, I beg your indulgence for a few moments to refer to the great loss this Board has sustained, and not only this Board, but the cause of Public Health throughout the Province, by the retirement of our esteemed confrere and well-known public servant, Dr. Peter H. Bryce, from the duties of the office, which through the kindness of the Honorable Provincial Secretary I have been called upon to fill. His long tenure of office and the marked energy he has on every occasion displayed in either the initiation of the work or the carrying out of sanitary investigations and other works of public health for the benefit of the citizens of this Province have placed him in the front rank of sanitarians on this continent. Indeed, only as years pass by will the public realize what they owe to his well applied and highly scientific work in all that relates to preventative medicine.

While regretting his personal loss, yet it affords me pleasure to state that Dr. Bryce is entering upon a field of work which offers unbounded opportunities for the exercise of his many rich talents, and that the benefits to accrue will be felt over the length and breadth of this fair Dominion.

As successor to one with whom it has been my privilege to associate for some years, I naturally feel that I enter upon the duties of office as a somewhat raw recruit succeeding an old and well-tried veteran, and I, therefore, trust for your kind indulgence in the discharge of duties which to my respected predecessor have become mere matters of routine.

I can, however, assure you as a Board that I shall be pleased at all times to furnish you with the fullest information in my possession, and my one aim will be to advance the progress of sanitary science in this Province, so that she may maintain the proud position of the premier authority in public health-work on this continent, and to which we are largely indebted to Dr. Bryce.

The returns of contagious diseases for the fourth quarter of the year 1903, are as follows:

	Cases.	Deaths.
Smallpox	25	...
Scarlatina	742	38
Diphtheria	1,491	202
Measles	.....	7
Whooping Cough	.....	35
Typhoid Fever	407	97
Tuberculosis	.....	475

And that an intelligent comparison may be made of the year's returns as given in the monthly bulletin of the Board, the following tables are submitted, A showing the monthly returns, and B the returns by quarters:

Table A.—Cases and Deaths for the Year 1903 by Months. Average Population Reporting 1,998,098, or 92 per cent., the Death Rate Being 12.6 per 1,000 per annum.

—	Smallpox.		Scarlatina.		Diphtheria.		Measles.		Whooping Cough.		Typhoid.		Tuberculosis.	Deaths from all causes.	Rates per 1,000.
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Deaths.		
January	196	10	500	90	510	59	....	6	.....	9	65	25	176	2,150	12.8
February	152	4	550	104	200	27	....	7	.....	7	60	20	163	2,176	13.4
March	175	1	515	95	228	24	....	2	.....	6	60	18	221	2,429	14.7
April	122	2	295	61	203	28	....	3	.....	19	57	19	195	2,236	13.4
May	66	2	391	43	205	22	....	4	.....	18	48	22	132	2,193	13.3
June	30	.....	297	52	191	26	....	14	.....	20	42	13	175	1,848	11.3
July	29	1	187	26	209	36	....	5	.....	11	47	18	139	1,873	11.5
August	15	1	103	14	122	24	....	5	.....	12	115	32	147	1,992	12.5
September	10	.....	100	6	240	30	....	....	.....	11	111	37	149	2,028	11.6
October	7	.....	232	9	541	66	....	1	.....	17	178	43	169	2,120	12.2
November	5	.....	279	9	476	64	....	5	.....	14	109	30	137	2,081	12.1
December	13	.....	231	20	474	72	....	1	.....	4	120	24	169	2,141	12.5
Total	820	21	3,677	529	3,599	478	....	53	.....	148	1,012	298	2,072	25,267	.....

Table B.—Returns of Contagious Diseases by Quarters.

(1903.)

—	Diseases.	Cases.	Deaths.
First Quarter	Smallpox	523	15
	Scarlatina	1,565	289
	Diphtheria	938	110
	Measles	.....	15
	Whooping Cough	.....	20
	Typhoid	185	63
	Tuberculosis	.....	560
Total		3,201	1,072
Second Quarter	Smallpox	218	4
	Scarlatina	983	156
	Diphtheria	599	76
	Measles	.....	21
	Whooping Cough	.....	57
	Typhoid	147	51
	Tuberculosis	.....	602
Total		1,947	967
Third Quarter	Smallpox	51	2
	Scarlatina	390	46
	Diphtheria	571	90
	Measles	.....	10
	Whooping Cough	.....	34
	Typhoid	273	87
	Tuberculosis	.....	435
Total		1,288	701
Fourth Quarter	Smallpox	25	.....
	Scarlatina	739	38
	Diphtheria	1,491	202
	Measles	.....	7
	Whooping Cough	.....	35
	Typhoid	407	97
	Tuberculosis	.....	475
Total		2,662	854
	Total contagious diseases for year	9,098	3,597

N.B.—Notification of typhoid fever cases is neglected, and this does not represent the extent of the disease.—SEC.

Smallpox. A study of these tables shows that during the year there was a noticeable decrease in the number of smallpox cases, the prevalence being

more marked during the first quarter of the year, when 523 cases were reported, with 15 deaths. The decline was most marked after the month of April, and the minimum was reached in the month of October, when only five cases occurred.

Scarlatina. The totality of this disease for the year was 3,677 cases, with 529 deaths, or a case mortality of 14.38 per cent. The disease was more markedly prevalent during the first quarter, when 1,565 cases were reported, with a mortality of 18.46 per cent., there being an apparent relationship between the case occurrence and the mortality rate.

The disease declined very considerably the third quarter, during which the school holidays occurred, reaching a minimum in the month of September, the increase of cases corresponding with school attendance during the last quarter of the year.

Diphtheria. Although this disease continues to manifest its power and virulence from year to year, yet to the medical practitioner it has lost its effect of dread, owing to our increased experience in the use of antitoxine. For it is quite manifest that the correct line of treatment to pursue is to use large, and often repeated large injections of the remedy at much shorter intervals than was previously the custom. Where this principle has directed the line of treatment carried out in this Province, I am assured the results have been most satisfactory, and cases which heretofore under the old line of treatment would have succumbed to the disease, have made a sure and often rapid recovery.

The insidious nature of the infection, its often continued presence in the mouth and nasal passages, after all local and constitutional disturbances have subsided, must always add to the difficulties of all precautionary measures. This one fact, however, is emphasized that no case should be released from quarantine until bacteriological examination of at least two swabs have negatived the presence of the Klebs Loeffler bacillus, and by preference these swabs should be taken by a medical officer of the Local Board of Health.

During 1903 there were 3,599 cases with 478 deaths, a case mortality of 13.28 per cent. The fourth quarter was that of greatest prevalence of the disease, 1,491 cases being reported, with 202 deaths, representing a mortality of 13.47 per cent., which is slightly in excess of the yearly rate.

Typhoid Fever. Owing to the imperfect notification of cases of typhoid fever it is impossible to draw any conclusions as to its mortality, but, judging by the deaths returned, the year seems to have been marked by its continued presence.

Measles and Whooping Cough. These two diseases, like typhoid fever, can only be judged by the number of deaths reported. Seemingly, medical science has, up to the present, arrived at no plan whereby some at least of the 148 deaths from whooping cough can be prevented.

Tuberculosis. It is to be regretted that at the close of 1903, we have to report a death roll of 2,072 from tuberculosis alone, and yet public opinion has not been stimulated into action whereby any municipality has seriously considered the advisability of providing, by means of a sanitarium, for the treatment of consumptive patients. It may be that the public are stunned by the needs of the situation and the financial demands that would have to be made. It cannot be that they are satisfied by what is being done on charitable lines only. The sooner the public realize it is essential for them to provide for the treatment of cases of consumption, as at present it is statutory they provide for the treatment of scarlatina, diphtheria, and smallpox, by hospitals erected for the purpose, at the public cost, so soon can it be said that we as a people have done our duty. The problem of the treatment of consumption is wider than the bounds of cold charity. It is one of vital and na-

tional importance; it appeals to all classes and creeds, rich and poor alike, and its treatment and control should be under municipal auspices. The principle has already been adopted by the Legislature, and it simply awaits the action of our municipalities for the successful carrying on of this most important work. Respectfully submitted,

CHAS. A. HODGETTS,
Secretary.

Reports of Committees.

PRESENTED AT THE MEETING OF THE BOARD HELD FEBRUARY 3rd, 1904.

Report No. 1 (1904) of Committee on Legislation.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—Your Committee on Legislation begs to report as follows.—

A meeting was held in the office of the Secretary on Dec. 4th, 1903. There were present Dr. Boucher (Chairman), Dr. Cassidy and Dr. Bryce.

The question of drafting a circular letter to the various County Councils, re County Health Officers, was discussed and a draft copy was drawn up and submitted to the Hon. the Provincial Secretary for his approval. After consideration of the same he in part approved, but was of the opinion that it should be more elaborate. After further consideration of the question he thinks that under existing circumstances nothing further had better be done.

Respectfully submitted,

(Signed) R. P. BOUCHER, *Chairman.*
J. J. CASSIDY.
CHAS. A. HODGETTS.

Report No. 1 (1904) of Committee on School Hygiene.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—Your Committee on School Hygiene begs to report as follows:—

In compliance with the resolution passed at the last session of the Board, arrangements were made, through the Secretary of the Board, with the Hon. Richard Harcourt, Minister of Education, whereby a series of experiments, both bacteriological and chemical, will be made upon the air of schools; and further, the officers of this Board have arranged through the kindness of Mr. J. L. Hughes, Inspector of the Board of Education of the City of Toronto, for the carrying on of these experiments at an early date.

We are pleased to state that the Minister of Education heartily acquiesced in suggestions of your Committee and arranged for and issued invitations to educationalists and sanitarians generally to attend a conference, where papers relating to School Hygiene were presented and discussed.

As most of the members of the Board were present at the Conference which was held in the Normal School yesterday, further reference is unneces-

sary other than to state that the Conference appointed a Committee consisting of Dr. C. Sheard, Inspector Hughes, Principal Scott, Rev. Bro. Odo and Dr. Hodgetts to present to the Minister of Education a series of suggestions drawn both from the papers read and the discussions.

The general opinion of those present was that the meeting had been very successful, the papers and discussions being interesting and helpful.

The opinion was expressed by many of those present at the Conference that a larger meeting should be arranged for at a convenient time when teachers generally could attend.

The circular calling the meeting and announcing its objects, together with the programme, are hereby appended.

Respectfully submitted,

J. J. Cassidy.
W. Oldright,
Chas. A. Hodgetts.

Extracts from Report of His Honour Judge Mactavish on Ottawa Isolation Hospital Investigation.

This report was presented to the Mayor and Corporation of the City of Ottawa, December 17th, 1903, and contains many valuable suggestions which may be useful to Local Health Authorities generally.

Gentlemen,—Acting under instructions from your Council as appears in a resolution adopting a report of the Local Board of Health, on the 5th day of October last, in the following words:

"Your Board has had under investigation the charges which have been made respecting alleged structural defects and faulty administration of the Isolation Hospital. Largely on account of ex parte statements which have appeared in the press and otherwise it finds that a considerable amount of anxiety and misapprehension exists amongst the general public. It is of opinion therefore that any statement given by it may be looked upon as to a certain extent one-sided and partial, and in order that such misapprehension may be allayed it begs to recommend that the whole matter regarding the construction and administration of the hospital be referred to the County Judge in order that a thorough inquiry under Section 324 of the Municipal Act may be made by him into all matters pertaining thereto, with special reference to any alleged structural defects in the building itself as well as in the general management and operation thereof, in order that should he find any such to exist the same may be remedied with as little delay as possible."

The necessity for the investigation arose in this way. A few months after the Isolation Hospital had been opened for the reception of patients many children who had been sent to the hospital apparently suffering from only one infectious disease, developed another disease while there. Cases of this kind became so numerous that public attention was called to this very unsatisfactory state of affairs.

* * * * * * *

It is quite clear that the ideal hospital for the reception and treatment of infectious diseases should be not merely in separate buildings, but in buildings separated by as long a distance as possible; with separate administration, separate dispensary and separate laboratories for pathological experiments, But while that is the theory we cannot overlook the practical side of the question, and the first consideration must be the limitation (financial and otherwise) imposed upon Municipal Corporations by the law of the land.

The accommodation for sufferers from infectious diseases to be provided by the municipality, must be so provided with a view to the population to be served, the area or district to be accommodated, and the financial means at the disposal of the municipality.

While separate buildings in the way of Cottage Hospitals are used in some large cities, there are in other large cities isolation hospitals, where from choice rather than from necessity the Local Boards of Health accommodate patients suffering from different infectious diseases in the one building with very satisfactory results. Interesting accounts of the experiments of these hospitals will be found in the reports from almost every large city in the United States and Great Britain, which accompanies this report.

It seems to me that, considering the evidence with a sense of the responsibility that one must always experience in dealing with such an important feature of this question, the present Isolation Hospital can be made, with very little expense, reasonably sufficient to meet all the requirements of the City of Ottawa for many years to come.

Provision must in the first place be made for separate and distinct ventilation for the scarlet fever ward. The ventilating shaft connecting with the cooking range, and with which the diphtheria ward and the scarlet fever wards are connected, permits atmospheric communication between these wards when the fire is low in the range. This should not be permitted, and in order to prevent the danger thus incurred, all communication from the scarlet fever ward with this shaft should be closed. Dr. Bryce has suggested other means of ventilating this ward which should be adopted.

My view of the situation is that there should be absolutely no communication in the building itself between the diphtheria ward and the scarlet fever ward. Mr. Arnoldi, the architect, has suggested in his evidence the closing up of the door-way leading from the passage way across the corridor in the diphtheria ward to the elevator, thus completely separating the two wards, and affording no means of communication between them from within the building. This would result in considerable inconvenience to the hospital staff and to the physicians who might be attending patients in both wards. Even that inconvenience can be very much minimized by some alterations which the architect may devise, possibly the doing away with one of the private rooms in the diphtheria ward for the purpose of affording a more convenient entrance.

It is inevitable that some isolated cases of mixed infection will occur in the best regulated hospital, and to provide for such the annex should be enlarged by the addition of another story to provide accommodation for those so affected as recommended by the Medical Society.

I would further recommend that if proper accommodation cannot be got at home for isolating a patient who is only suspected of having one of these infectious diseases, some provision should be made by which the patient could be kept under observation for a time, in order that the diagnosis of the case may be accurate, and the patient sent to the proper ward.

While the other objections contained in the reports of the Medical Societies are worthy of the most earnest consideration, in my opinion by strict and careful administration, the dangers apprehended therefrom can be so minimized that they would not be of a serious character.

It is quite apparent that the administration of the Isolation Hospital had not been satisfactory. The reports received by the Local Board of Health from time to time were not so full and complete as they should have been, and as a consequence those especially charged with making provision for such emergencies as did arise at the hospital were not made aware of the serious nature of the situation until information was obtained through the medium of

public discussion and public criticism. The Local Board of Health should have the most precise and accurate information as to every detail relating to the management and administration of each department connected with the hospital. There should be enacted a code of rules and regulations defining the duties of each and every person who is employed in and about the hospital. The Medical Health officer, as superintendent of the hospital, is responsible to the Local Board of Health and to the public generally for its administration and management. In his absence it should be the duty of his representative at the hospital to see that all rules and regulations affecting the administration should be carried out to the letter. One cannot very well imagine any condition where there is greater need for stringent regulations, and for a strict compliance with them in every detail. The situation is such that what may appear to be an unimportant breach may result in the most serious consequences.

It would be impossible in this report to attempt to suggest the form that such rules and regulations should take, but in the framing of them one consideration should always be kept in view, and that is the necessity for isolation and the prevention of any communication between those who are attending to patients suffering from one disease with those who are attending to patients suffering from another. The duties of each employee should be so clearly defined as to leave no room for doubt. The sterilizing of clothing and disinfecting the person, the changing of the outer garments on going from ward to ward, should also be insisted upon. In short, the rules should err in the direction of being too minute in detail.

A strict observance of the rules should be an absolute condition of the employment, and the slightest breach should be ample cause for dismissal.

The nurses and maids who undertake the arduous duties which such position entail, should at the same time realize that they are, while so employed, entirely cut off from the fellowship and society of the general public. Their pleasure in life should be found in their self-sacrificing devotion to duty, and even their recreation should be found in solitude.

A few individual cases of alleged neglect were submitted and considered during the investigation. Most of these were cases where the patients contracted another disease when recovering from the disease for the treatment of which they were sent to the hospital. The evidence has left no doubt on my mind that some patients did contract chicken pox and some diphtheria while undergoing treatment for scarlet fever at the Isolation Hospital.

Although the origin of these diseases is one not easy to trace with accuracy, it is apparent that defective ventilation, absence of proper and complete isolation of the nurses from the different wards, especially those detailed to attend on cases of mixed infection, and a mistaken diagnosis (in one instance at least) have all contributed to the prevalence of the cases referred to. I do not, however, find that there has been any neglect on the part of the nurses in the treatment of the patients who were suffering from either or both diseases.

Cases of mistaken diagnosis will inevitably occur notwithstanding the vigilance of the Medical Health Officer, unless provision is made for minute observation in doubtful cases before admission to the wards.

In reviewing the whole matter it seems to me that with the alteration in the building suggested by Dr. Bryce and Mr. Arnoldi, and with the addition to the annex for the reception of those patients suffering from mixed infection, the hospital accommodation will meet all the requirements of the city and district for some time to come.

Credit is due to the medical societies for the very great care and attention which they gave to the request of the Local Board of Health, and for the very thorough investigation of the institution. There is no class in the community more interested in the erection, maintenance and administration of a hospital for the treatment of those afflicted with infectious diseases than the medical profession, but it seems to me that the object which they, and the public generally, have in view, can be attained without the extraordinary expense which the carrying out of their recommendation would entail.

I am assured by the Medical Health Officer that many of the matters of administration which were open to criticism have now been attended to, and the causes of complaint have been removed.

In closing my report I desire to be permitted to make a suggestion which, although not coming within the scope of my commission, I consider of the very greatest importance. Your Council should, in future, appoint at least one member of the medical profession on the Local Board of Health.

Papers Presented at Conference on School Hygiene.

HELD IN THE NORMAL SCHOOL, TORONTO, FEBRUARY 2nd, 1904. CHAIRMAN, WM. SCOTT, B.A., PRINCIPAL OF THE NORMAL SCHOOL.

Relative Prevalence of Contagious Diseases in Children of School Age.

By P. H. BRYCE, M.A., M.D.

Inspector of Immigration for Canada, and late Secretary to the Ontario Board of Health.

To everyone, but especially those interested in the care of the children of our Public Schools, the subject of this paper becomes of extreme importance.

We naturally are all interested in the question of the prevention of contagious diseases amongst children at all ages, and in the measures by which such prevention may be accomplished; and it is natural to enquire how far schools are an aid or hindrance to such prevention. In one sense, our schools are both an aid to the dissemination and a means of preventing the spread of contagious diseases. They do aid in the dissemination of disease in the same way that infection spreads amongst crowds everywhere; but they are a means of prevention through the educational influences which spread often from the children to parents in these days of general compulsory school attendance and instruction in hygiene. Not until the organization of the Department of Health, under the Local Government Board in England, was there any systematized study of the causative influences in the spread of infectious diseases; but since the appointment of Dr. John Simon, its first medical officer, investigations have been pushed in every direction. This is illustrated in the following quotation from Dr. Clifford Allbutt's System of Medicine:—

"The influence of school attendance on the diffusion of diphtheria was noted almost as soon as skilled enquiry into the circumstances of the disease was instituted. This was pointed out by Mr. W. H. Power in 1876, and in the following year I had an opportunity of studying the matter during a maintained prevalence of diphtheria at Coggeshall, in Essex. It was found practical to divide the 928 children in the village into age groups, and then to ascertain within each group the relative amount of diphtheria in those who attended school and in those who did not. Under three years of age school

attendance was not found to have materially influenced the number of attacks; but in the age period, three to twelve years, the incidence of the disease was not far from 50 per cent. greater on school attendants than on others and in the age period, twelve to fifteen years, the school attendants suffered nearly three times more than those who were not at school."

A similar result in the instance of scarlet fever is illustrated in the annual report of Dr. Murphy, Medical Officer of Health, of London, England, for 1893, in connection with 17,704 cases. Of these there were:—

5,279 cases under 5 years of age.
6,727 cases under 10 years of age.
3,187 cases under 15 years of age.

Or but 29 per cent. of the cases were under five years of age.

Dr. Murphy illustrated the fact in another way by showing how the prevalence of this disease declined with the summer vacation. Thus:—

Under 3 years the decrease was 1 per cent.
Under 3 to 12 years the decrease was 26 per cent.
Over 13 years the decrease was 13 per cent.

Increase in succeeding month:—

Under 3 years the increase was 4 per cent.
Under 3 to 13 years the increase was 65 per cent.
Over 13 years the increase was 26 per cent.

Such is the experience of officers of health in England, but we are able to further illustrate the prevalence of infectious diseases from our own statistics.

During the first half of 1897 we had a serious prevalence of scarlet fever in Toronto. There were in all 1,138 cases and 63 deaths.

In the returns for May, and up to the 5th of the following June, there were in all 280 cases. Of these 198 attended school, or 70 per cent. of the whole were school children.

Such are the statistics of several outbreaks in which the details regarding cases have been available. We have, however, in addition to this, always available, the study of the death returns from year to year for the whole Province and for particular municipalities.

The following table, from the Registrar-General's Report of 1900, supplies a number of interesting details, by which comparative results may be obtained. It gives the population of the Province by age periods from 0 to 19 years inclusive, by years for the first five-year period and for the three succeeding quinquennia. It further gives the deaths for each of the several periods separately for scarlatina and for diphtheria.

Table showing for 1900, population by age periods; percentage of population in age period; Total deaths by age periods; deaths by age periods from scarlet fever and diphtheria.

	Year.									
Age period	0–1	1 to 4 years.				0–4	5–9	10–11	14.19	5–19
Population	49,500	190,347				239,847	246,610	243,277	232,073	.....
Population percentage	5%	19.9%				24.9%	25.8%	25.29%	24.13%	.....
Total deaths	7,163	1,989				9,152	803	563	923	1,789
		1	2	3	4					
Total deaths from scarlatina	18	20	30	17	24	109	39	10	3	52
Total deaths from diphtheria	77	61	94	90	85	407	205	66	29	300

From the columns of totals we find that for the first quinquennia, the deaths for both diseases together were 516, and for the period of 5-20 the legal school period, they were 352, and in the 5-9 period, separately, 244.

It will be observed that the ratio of deaths in the first five years of life is about three times that in the second five-year period for scarlatina, and twice that for the same period in the case of diphtheria. We see in this an

apparent disagreement from the foregoing statistics regarding the cases as reported in the different illustrated statistics given.

There is, however, a natural explanation for this in the fact that the percentage mortality of scarlatina, in England, in 14,000 cases between 1888 to 1893 under five years was 16.8 per cent., while that for the five to nine year period was 5.6 per cent.

In the same way diphtheria which, between 1895 and 1899, had 25.6 per cent. of deaths to cases of children under 5 years, had 14.6 per cent. of deaths for the five to nine period. Or there were 1,536 as compared with 695. What is very pleasing to notice, however, in this study of English statistics is the relatively great decrease in recent years, not only of the fatal cases and total mortality, but also of the lessening percentage in school children, due doubtless to the closer inspection of school children and the very general removal of first cases to the isolation hospitals.

To conclude this reference to the relative prevalence in the two periods through illustrative statistics, I shall take the returns of our two largest cities, Toronto and Ottawa, for 1903. Except for the first three months of the year, the following are the number of cases, as well as deaths, for the year 1903. We find that for the ten months from March to December, Toronto had 418 cases of scarlet fever and 62 deaths, and 806 cases of diphtheria, with 100 deaths. The deaths for the whole year by ages are seen in the following table: table :—

Deaths by age-periods in Toronto, in 1903, for scarlet fever and diphtheria.

——	0-1	1	2	3	4	5-9	10-14	15-19	20-24	25-29	40-44	Total.
Scarlet Fever	4	7	12	14	7	32	10	2	2	2	1	92
Diphtheria	7	9	22	18	20	44	7	1	4	1	1 (2)	136
Scarlet Fever and Diphtheria	....	....	3	1	....	3	1	.....	.....	.....	.....	8

Comparing cases with deaths as given, we find that the percentage death rate was 14.7 for scarlatina and that for diphtheria was 11.7. I have not the figures enabling us to determine the death-rate at different periods, but we may assume that the relative rates would be much the same as in other years and places.

We find for scarlet fever that in the 0-5 period the deaths were forty-four, while those for the school period 5-19 were exactly the same. Applying the rates in the London report, this means that there were three times as many cases among children of school age as in those from 0-5 years.

For diphtheria it would appear that the record for children of school age is more favorable. Assuming that the London rates prevailed of two to one for the two periods, we find the prevalence in the schools to have a ratio only 50 per cent. greater than that for the 0.5 year period.

The following table illustrates the relative prevalence of cases in the City of Ottawa.

——	Under 5.					5-9	10-14	15-19	20-24	Total.
	0-1	1	2	3	4					
Scarlet Fever	.....	.....	1	1	.....	2	.....	1	.....	5
Diphtheria	.....	3	4	6	6	3	5	2	1	30

From the figures here given for scarlet fever we similarly conclude that the prevalence of cases amongst the school children was three times as great in the 5-9 period as in the 0-5 year period and but five in the 5-9 period.

These figures are of extreme interest since they represent the results of a year's work, where for nine months all cases of diphtheria were removed to the Isolation Hospital so soon as diagnosed and the school children of the rooms where cases had been were inspected till the period of incubation was over. The very considerable number of cases which occurred during the year (320 of scarlatina and 351 of diphtheria) removes the element of incorrect deductions which may result from a small number of case.

The history of these Ottawa figures as a statistical study is most interesting. For years the city had an unenviable reputation in the matter of contagious diseases. In 1902 there were in all 689 cases of scarlet fever and 234 of diphtheria. In February, 1903, a new well-equipped isolation hospital was opened, and after March all cases of the diseases occurring in the city were sent to the hospital. Of the 320 of scarlet fever, 198 were treated in the new hospital during the eleven months, the balance, 102, were treated elsewhere, or after the complete removal to hospital of all cases began, there were for the nine latter months of the year but 159 cases compared with 161 in the first three months.

Of the diphtheria cases, 251 cases, sixty-nine occurred in the first three months of the year and 182 in the latter nine months, during which all cases were treated in the hospital. While not directly bearing on this subject, it is pleasing to remark that the total deaths for the nine months for scarlet fever were but three, while those for diphtheria were nine, or 1.52 per cent. and 4.9 per cent. of cases. Such a low record of deaths for so large a number of cases has, so far as I know, never hitherto been obtained. But the other important point is the effect of the removal to hospitals of first cases, in lessening the prevalence of the disease. In 1902 there were 689 cases of scarlet fever in Ottawa, with thirty-nine deaths, and 487 cases of diphtheria. As a matter of fact, there has resulted from the more effective methods adopted in 1903 a reduction of over 50 per cent. in the cases of scarlatina and 85 per cent. of deaths, and 41 per cent. in the cases of diphtheria and 54 per cent. of deaths.

But little more I think need be said on the subject, as the methods for dealing with infectious diseases in schools will be dealt with in another paper. To me, and I think to every one, must be apparent that practically there is no limit to the economic and life-saving results which public health work moving along the lines of experimental science is not capable of. What apparently is necessary is—:

1st. A conviction arrived at by such statistics as have been cited, that disease is disseminated in such ways as I have indicated.

2nd. That we be convinced by the results of such methods as have been especially illustrated by the Ottawa statistics, that an enormous saving of cases of disease and deaths is possible.

3rd. That we possess scientific methods so certain, when persistently and systematically carried out, that they will suppress outbreaks of epidemic disease almost with the same certainty as the demonstrated amount of work which a properly constructed machine will perform with the combustion of a definite weighed quantity of fuel. All that is further required is to educate the public that such work is life-saving and patriotic, and that, like all other philanthropic work, the results are not only good to the receiver, but also to the giver. As Sir Lancefal, in his search for the "Holy Grail" came to realize:—

> "The Holy Supper is kept, indeed,
> In whatso we share with mothers need;
> Not what we give but what we share—
> Who gives himself with his alms feeds three,—
> For the gift without the giver is bare;
> Himself, his hungering neighbor and me."

How to Prevent Outbreaks of Infectious Diseases Among School Children, etc.

By CHARLES SHEARD, M.D., M.H.O., Toronto.

The subject of this paper is "How to prevent outbreaks of infectious diseases among school children, and the best methods to adopt tending to limit and suppress these diseases."

Bacteriological investigations into the cause of diphtheria have contributed considerable to elucidate the methods by which infection may be brought about and the nature of that infection per se. This disease, as most of you know, has been demonstrated by Professors Klebs and Loeffler to be due to a special micro-organism commonly called the Klebs-Loeffler Bacillus. It is a low form of vegetable life, capable of reproducing itself with great rapidity under favorable conditions, demanding, however, certain special forms of food for its sustenance, and growing upon a soil or medium very similar in conditions to those favorable to low forms of vegetable life; and whilst the contagion in other infectious diseases has not been so exhaustively studied, there are fairly good reasons for assuming that in the majority of instances they are governed by the same physiological laws.

As an introduction to the subject, it would be important to consider some of the reasons which render children more susceptible to contagious diseases, such as scarlet fever and diphtheria, than adults. The conditions of child life and the habits of children largely account for this. It is certainly true that outbreaks of these contagious diseases are much more prevalent during school terms than during vacation, and seasonal influence so much dwelt upon by statisticians of various countries should not be considered apart from the school room, which is operative during such seasons when these diseases are most prevalent. Children in schools are brought into more intimate contact than adults are in any walk of life, and they remain in contact for a much longer period of time, often being crowded into a room, the ventilation of which probably is not of the best. They sit in close contact; they communicate in a much more intimate manner than the conventional adult would, and with child-like confidence and simplicity interchange not only their garments, caps, mufflers, coats, and sometimes wraps, but even their toys; girls sometimes their chewing gum. The mouth organ, the bazou, the rubber judy squeaker, whistles, pea-shooters, string, stick candy, and the like, are often found among the contents of a child's pocket. The methods in which children use leadpencils, wetting one end to mark with, chewing the other in "maiden meditation fancy free"; cleaning their slates sometimes not in accordance with sanitary regulations; interchanging books, and a common drinking cup, will be sufficient to indicate to an ordinary reflective mind that if these diseases are dependent upon organisms which are lower forms of vegetable life and amenable to influences similar to those affecting higher forms of vegetation, seed, soil, and season; these are certainly splendid opportunities for the seed to be disseminated if seed exists.

In addition to the above, there is another very important and altogether different side to the question, and one which is so frequently operative through the medium of the school. I refer to mild cases of these diseases which possibly have proceeded without having been seen by any medical attendant, which have never been suspected by parent or teacher, and which constitute in the school room a fruitful and continuous source of infection, operative sometimes for many weeks, and which is, in my opinion, unquestionably the source of epidemics in schools in 99 per cent of cases, and is frequently overlooked whilst the teacher and even the sanitarian proceed upon a tour of investigation in the drains, the ventilation, and the cellars.

I could furnish almost numberless illustrations of this; every medical man who has had anything whatever to do with school infection is aware how often a mild case of scarlet fever, never diagnosed, never treated, never suspected, has returned to school in the stage of desquamation, spreading the disease broadcast. The same can be said of sore throats, sometimes very simple sore throats, so mild that no doctor was required, with, however, sufficient exudation, and secretion issuing therefrom, teeming with the specific micro-organizations of diphtheria, furnishing seed enough to infect the school and lead to its closure; and, worse than all this, the child with a dirty nose, with nothing whatever the matter with it only a dirty nose, with chronic ozoena or a sero-sanious ichrous discharge which even the medical man is apt to overlook, is the most venemous of all, because when the child sneezes, as it often does, or coughs, or wipes its nose upon its cuff, it scatters this infection upon book, garment, playmate, everywhere.

If these are facts, the lines upon which they must be overtaken are clearly indicated. The mouth toy must be banished from the school; space and air and sunshine provided for the child in the school room; the teacher must be instructed and educated up to the point of recognizing the indication of contagion in children; and the school children must be inspected by a competent medical inspector whenever contagious disease appears amongst the scholars.

To cover this work in a practical manner is not always simple. It requires a recognized system and money. Municipalities generally incline to the opinion that money for the ordinary sanitary work of inspection is waste, yet as a matter of fact, there is no expenditure in connection with municipal economics which yields a larger and more direct return. Moreover, the Health Department and Inspectors must work in harmony with the Educational Board and school teachers, for the latter when rightly informed upon ordinary health matters constitute the strongest ally a Health Department can have. Every case of contagious disease must be promptly reported to the Health Office and the case as promptly followed up. The scholars exposed or domiciled in the infected house must be rigidly excluded from school during the incubation period of the disease, and until such time as they can be certified to as no longer liable to convey the disease, and this certificate must be furnished by the officer who alone is personally responsible for controlling the epidemic. How frequently we see medical practitioners imperfectly informed as to the details and conditions of an individual case, sometimes actuated by the desire to meet the convenience of influential or wealthy patrons, furnishing certificates which are not always consistent with opinion usually entertained by physicians. In Toronto I am happy to say that with the co-operation of the School Board we have in the past been able to maintain the position that no child of a family wherein there has been contagious disease can be permitted to return to school without a certificate authorized and signed by the Health Officer. The ordinary contagious disease Inspector has furthermore instructions to report instantly to the principal of the school where the child has attended, and must ascertain for himself that no members of the infected family are in attendance at school, and if such children are found so to be, to remove them, and it is almost a daily experience that such supervision and constant watching is necessary. A full and complete record of the school bearings in every known case should also be kept. Such record must show the scholar's name, the room the pupil was in, when the child last attended school, where the other members of the family reside, and how the case is being handled, so that at a glance the supervising officer can judge accurately of the situation. The teacher also must be informed, and I am

strongly of the opinion that at every teacher's convention and on all occasions where school teachers assemble for the purposes of mutual improvement and the comparing of notes as to teachers' methods, time should be allotted for practical addresses upon ready means of detecting the various contagious diseases and instructing teachers as to what they would be justified in regarding as suspicious and important to refer to the Health Officer of the district, or his medical assistants, with the object of determining the existence or non-existence of infection.

In the City of Toronto I am free to say that school teachers are well abreast of the times in this particular work, but I hope that, with increased opportunity, they will become still more expert in this invaluable and practical field of usefulness. Not only is this important in connection with those diseases enumerated within the Public Health Act, but also in connection with some of the lesser forms of infectious diseases, such as ringworm, impetigo contagiosa, scabies and the like. The School Board must also be educated up to the point of realizing the necessity of placing within the grasp of the child physical as well as mental force. Despite all that modern sanitarians have done and are now doing, how little some of our responsible bodies realize the value of fresh air and sunshine in the development of the physical life of the child. Shorter school hours and longer vacations are commensurate with brighter faces and clearer intellects. That homework and punishments which add to mental worry and fatigue make dull scholars duller, and bad ones worse; that the beauties of Nature, the fields and the flowers have as much in them to admire as the monument raised to the vanity of a teacher who has taught his pupil to tell the time of the clock by algebraic equation; to know that basements were never made for school rooms; that the greater part of a child's life is spent in school; that his associations for all future time will date from that particular period and its associated memories, his school days should be as happy as it is possible for man to make them. Fresh air in abundance; freedom from odors; the best system of ventilation; light on every hand, with desks and lockers that will, as far as possible, secure and maintain independence in each pupil and his belongings, are, in my opinion, the rights of the scholar.

I have had in the past the audacity to suggest that some children would be helped by being cleaned and clothed, and have been laughed at for my temerity, but if those whom I am now addressing have seen some scholars as I have seen them, who have been compelled to attend school and sit with others whose odors mark their nationality as well as their family connections and stigmatize their home surroundings, they would believe with me that there was more force than friction in the suggestion. The Provincial Board of Health last year very properly provided for the personal inspection of every pupil and every absentee where a case of scarlet fever or diphtheria appeared amongst the pupils of a public school. I will not say that in Toronto that has been done with mathematical exactness, because we have over 30,000 school children to supervise, but I am proud to say that the work has been done in the spirit and with the assurance that it would prove satisfactory to all who care to study our methods. The medical inspector is required to make constant and repeated visits to the school room for the purpose of detecting by a skilled medical examination the existence of latent disease or overlooked infection amongst the pupils; furthermore, to examine the absentees with a view to definitely understand and report in form the cause of such absence, so that the reason for the non-attendance of such at school will be on file in the Health Office.

We must not forget that parents are compelled to send their children to school, and it is the bounden duty of the health authorities and the municipality to see that every security is afforded them to avoid contact with infectious diseases.

The Place of the Teacher as an Instructor of Hygiene.

By WM. SCOTT, B.A.
Principal of Normal School, Toronto.

Mr. Chairman and Gentlemen,—Let me point out at the very outset that, account for it as one may, the people of the Province—teachers and parents alike—have set up a false standard of judging of education. They consider that a boy or girl is fitted to graduate into the world of business activity, if he has attained a certain intellectual standing which is measured by his ability to reproduce answers to certain kinds of questions. These generally call for ability to retain facts rather than power to do; rather than ability to adapt himself to changed conditions; rather than resource to deal with unforeseen circumstances. The idea is abroad that schools are places where certain subjects are learned. Parents and trustees alike hold the teacher responsible for the progress of his pupils in intellectual work alone. If other duties are ever thought of, they are soon pushed to the background by the knowledge that the teacher has a remarkable record for preparing pupils to pass the entrance, promotion, or other examinations. No one ever thinks of holding him responsible for any physical imperfections. Mothers take pleasure in pouring their lamentations into the sympathetic ears of teachers regarding the physical shortcomings of their children. "They have never been strong; they are not like other children; they do not care for rough games," etc., etc. This is not done with a view of finding fault with schools or teachers, nor that the teacher may exercise a wise supervision over their intellectual work, but rather that they may be exempted from physical exercise.

Now the teacher can do more harm here than in the intellectual to train the pupil. He can do much to tone up the circulation, to stimulate the vital energies, to put the glow of health into every fibre, to give the body strength to eliminate properly the poisonous waste matter that under sluggish action opens the door to disease, to put the mind into a happy and resonant mood, to train the determining and executory powers, to cause the child to become decided and definite in his actions, and thus make the child more careful in all work, intellectual, moral or physical, more careful with the multiplication table, more accurate and ambitious in all his doings, more truthful, more exact and more earnest.

It has long been a maxim of pedagogical lore, mens sana in corpore sano i.e., the best intellectual work cannot result unless under hygienic conditions; a maxim, however, which is often more honored in its breach than its observance. Now, when it is understood that good health is the smooth working of the bodily machine, and the smooth working of the several component parts is required for the smooth working of the whole, and vice versa, the health of the central nervous system becomes of paramount importance. Now, the health of this central system is conditioned upon the prompt and adequate action of the blood-forming, blood-distributing and blood-purifying organs, all of which mechanisms, being under the control of the central nervous system, must in order to work smoothly be subject to the regulative action of a healthy brain. So soon as the variety and significance of the bodily functions exercised by the brain, in addition to its mental function, are clearly apprehended, so soon will the importance of striving to shape so-called edu-

cation so that school life shall exert a positively beneficial influence upon the physical growth and development of the bodily powers of the school child be admitted and to some extent realized.

Judging by what can be observed almost everywhere, it may be assumed that the majority of men and women know little about hygienic conditions. And when it is considered that the teacher alone has an opportunity of reaching all classes through the children, it becomes of the greatest importance that children should not only work under hygienic conditions and be under one who understands and appreciates such conditions, but also that they should be carefully instructed concerning the elements of such conditions at least, so the man and woman of a few years hence may themselves know the meaning of proper conditions of living.

When it is understood that growth and development are hindered, amongst other things, by unhygienic conditions connected with school life, it becomes important to make as complete an inventory of these as possible. They may, it seems to me, be considered under two great headings:— (1) The building, its equipment and surroundings, and (2) pedagogical method of procedure.

Injury through bad ventilation, lighting, heating, and, at times, plumbing, are too common yet in Ontario. Imperfect equipment is responsible for spinal curvature from improperly adjusted seats and desks, for defective eyesight arising from the use of poor paper, small type, poorly formed letters, and poor spacing; and for lung troubles, which arise or are aggravated by chalk dust and floor scourings.

Pedagogical procedure is responsible for all those violations of sound pedagogy which result in over pressure and neural fatigue, and which manifest themselves, even in school, by habitual inattention, lack of contration, stupidity and chronic lassitude in the pupils. The final results being poor, slow growth, and low vitality on the physical side and continuous dullness and stupidity on the intellectual side. Here the responsibility is with the teacher, who is either ignorant or heedless of brain hygiene, and perhaps with the parent, who has set up a false standard of mental excellence.

In view of these important considerations, does it not become urgent that the subject of hygiene as such should receive far more attention, both in the training schools where teachers are prepared to discharge their duties, and in the schools themselves, than is now given to it? Time enough is, I suppose, given to a subject which appears on the time-table as hygiene, but the lesson itself is usually one on anatomy and physiology; and hygiene and hygienic conditions of life receive but scant attention.

Having shown the importance of this subject to the general well being of the child, let me now briefly consider its bearing upon the work of the school. In doing this, I am at once brought face to face with the problems: "Who should teach this subject, and if the teacher, what should he know that he may be able to illustrate hygienic laws and conditions from day to day as well as give direct lessons on the subject.

1. Who should teach this subject?

If what has been said in the course of pointing out the importance of the subject is correct, then only one answer can be given to the question. Who is on the ground to look after the ventilation and temperature of the room, but the teacher? Who is always present to see that proper hygienic attitudes are assumed by the pupils at such exercises at Writing, Reading, Drawing, etc., but the teacher? Who can deal with the problems of length of lessons, mental fatigue, home work, proper alternation of subjects, periods of rest and recreation, but the teacher? Then, while a medical doctor might be available

in cities and towns, the services of such could not be obtained in rural schools, hence a most important part of the community would be deprived of the benefits arising from a knowledge of this subject if the teacher of the school did not give the lessons.

It is not necessary that the teacher should have the profound knowledge of the problems involved in Sanitary Science which is usually associated with the medical profession to be able to give intelligent instruction in it and to illustrate in a practical way the ordinary methods of dealing with many of the questions involved in it. Hence I conclude that the teacher is the proper person to treat this subject in school.

What should he know concerning it to enable him to discharge his duties effectively?

1. The teacher should understand the principles of ventilating, heating, and lighting, so that he may make the most of the means at his disposal to prevent the evils resulting from having to work in a room which may be badly ventilated, lighted and heated. He should know the meaning of pure air and proper temperature, as well as the beneficial effects of sunshine and the pernicious results of closing up rooms that sunshine is rarely permitted to enter them. He should understand the conditions affecting the site of the building and its surroundings, so as to render it sanitary or the reverse.

All these physical conditions affect the general well being of the school to such an extent that it is important for the teacher to be able to make the best use of such means as he can to maintain the health of the pupils under him at the highest general average possible.

2. The teacher should understand the importance of correct attitudes in all school exercises, as Writing, Reading, Sitting, Working, etc., to prevent spinal curvature, i. e. scoliosis, stooped shoulders, narrow chest, or weak eyesight. He should know that the same position cannot be maintained for any considerable time without great nervous exhaustion and physical fatigue; and hence he should understand the necessity of frequent changes of attitudes, especially with young pupils, in order that they may do good work.

3. He should understand something of the nature of infectious diseases, so that he may be able to point out how these are spread, and thereby making it clear how the infection may be inhibited, thus saving not only much expense, but also often many lives. The benefits of thorough isolation of the sick can be made so clear to the pupils that they and their parents through them may be brought to a hearty co-operation, with all means looking to the extermination of such diseases. Parents and others do not always co-operate with health officers now. Then, in connection with the complete disinfection of all infected material, pupils should become intelligent, so as to aid these officers by observing the many minor details which must be carried out by the people themselves if disinfection is to be effective.

4. The teacher should know the means used in discovering the existence of forms of sensory, motor and central defect in children, and be able to apply these. When teachers can do this many so-called stupid children will disappear from school. It is now known that some children do not hear well or see well; that adenoid vegetations in the vault of the naso-pharynx interfere with proper breathing, causing "mouth breathers," and proper aeration of the middle ear and eustachian tubes; that abnormally large tonsils may occasion the same trouble. A child so troubled has a characteristic, stupid, vacant appearance, due to the fact that he is more or less deaf and has throat or nose obstruction or both. The teacher should know that the remedy lies in a visit to a surgeon, who removes the growth and prescribes proper treatment for the ears. The teachers who are ignorant of these simple truths at

times attempt the cure themselves and the child knowing he is being reproved, and perhaps punished, for no fault of which he is conscious, is driven into sullenness, obstinacy and general stupidity. "Lord God," exclaimed Sir Thomas Elyot in "The Governour," "how many good and clear wits of children be perished through the ignorance of schoolmasters." Then he should understand the nature of eye defects, so as to give the most favorable positions in the room to those afflicted, instead of trusting to mere chance or assigning them the darker and more distant places, while those of normal vision occupy more favored sittings.

5. He should know something, the more the better, of brain hygiene, so that he may arrange his programme, as far as possible, to minimize fatigue and conduct the work of the school so to secure the best results with the least expenditure of energy. Thus the length of the lessons will be regulated and the time of the day at which each should be taken up will be settled on a scientific basis and not in a haphazard way, as is often done.

When the teacher appreciates the evils of over-pressure, children will not be so often reprimanded for inattention as now; it will be easily seen that they are over-fatigued and unable to work. Then, home lessons will be given with much more care; then he will understand that the troublesome restlessness of a child may be the sign of the approach of some nervous diseases, as Hysteria, St. Vitus' Dance, or Epilepsy; and in the days to come he will not have the unavailing regret of having misjudged and punished such when they were wholly undeserving of it.

He will know that fatigue varies with the condition of mind and body at the time; that the child tires sooner when the work is distasteful, or when the organs are unhealthy, or when poorly nourished; that the body becomes wearied quicker when the mind is tired and the mind more quickly when the body is tired; that the child tires more quickly at one season than another; that the condition of the atmosphere, the weather, the time of the day, all affect the normal power of endurance, that rapid growth diminishes the powers of endurance; that the child who has grown quickly tires quickly; that hence, after working the growing child all the school day, home lessons become harmful if calling for much effort; that too long continued drill in mechanical work, such as tables in arithmetic, may result in the arrest of the development of the growing brain, etc.

6. He should be intelligent concerning the general problems involved in Sanitary Science, such as sewage as a vehicle of disease and the disposal of such; water, how it is contaminated, and the precautions to be taken to secure pure water; bacteriology and the germ theory of disease; the philosophy of cleanness; the dangers of public drinking cups, towels, etc.; filth and filth diseases; general care of the health, involving such questions as why, what, and when to eat; why, what and when to drink; etc.

While all of these problems concern the community as a whole, some may seem too far removed from the interests of school children to be discussed with them, but as already said, the children of today are the fathers and mothers of tomorrow, and so general intelligence would soon become common concerning questions which are always obtruding themselves and calling for a more satisfactory solution than at present.

7. He should know how to carry himself in cases of emergency, such as fainting, hemorrhage, bites, burns, broken bones, dislocations, sprains, apparent drowning, etc., so that he may be able to render intelligent and effective aid to the sick or the injured before the doctor arrives.

8. He should understand the nature and effects of stimulants and narcotics upon the human system, and be acquainted with the teaching of mod-

ern science concerning these, so that he may not injure a good cause, as is, at times, done now by teaching things which the children themselves know are not correct.

In conclusion, permit me to say that I believe our teachers can be trained to do this work; that no medical training is needed to recognize the presence of marked anaemia, weakness, lack of endurance, spinal curvature, poor vision, habitual headache, round shoulders, flat chest, mouth breathing, fever, etc., and to adjust the appliances at his disposal to secure the best ventilation, heating and lighting possible with these appliances.

The Necessity of Physical Education in Our Schools and the Utility of Military Instructors.

By CHAS. A. HODGETTS, M.D., L.R.C.P.Lond.

Secretary Provincial Board of Health, Deputy Registrar General, Member Sanitary Institute of Great Britain, Capt. A. M. C.

Mr. Chairman and Gentlemen,—It is not my purpose to discuss either the need for some systematic form of physical education and military drill, or the physical and mental advantages to be derived therefrom, as I had the privilege of presenting these at the meeting of the Executive Health Officers held in Peterboro' last September.

Before considering how a system of drill can be provided for, and by its enforcement during school and college life, the general health and physique of the people improved, and incidentally the male population trained in military knowledge, it may not be out of place to briefly review the present situation and consider some of the baneful consequences of neglect of this important class of education.

To discuss at length the importance of this branch of education is entirely uncalled for before this gathering of educationists and sanitarians, of its necessity as a part of the educational system most, if not all, are already convinced. We may differ in methods and the details for the carrying out of drill, but of this we are all convinced—the necessities of this twentieth century as regards both the boy and the girl require a sound body as well as a sound mind—for many years the youth have been treated to an intellectual feast where their brains have become satiated with saccharine and starchy educational titbits, or the cream puffs of some educational faddist, or ad nausem have had to swallow that which was mentally indigestible. All this too in environments both at school and in the home which would not suit even the most lenient sanitarian. Thus have the youth been trained in the past, the chief aim of education apparently having inclined to the scriptural injunction, "with all your getting, get understanding." The result has been largely an intellectual victory; but the victory has been gained at considerable cost. We have now, however, reached that stage when we are convinced that the race for life is not to the swift mentally, nor can the physically strong always win its battles. "The conclusions drawn from the physiological investigations made in Europe and America into the distortion of the body caused by the demands and pernicious practices of school life are startling in the extreme."

Prof. E. R. Shaw, New York University, writing in 1901, says:—"Despite all that has been written of the dependence of mental development, there has not yet been accorded to physical culture the place in our schools which its importance demands. How best to secure physical culture is un-

doubtedly the question of greatest importance in education at the present time."

And Dr. Scudder, Boston, states:—"The tendency in schools generally is to over-emphasize intellectual development and the requirement of recorded knowledge by filling every available minute of the school programme with requirements designed to accomplish this end." And Sir Frederick Treves, writing upon physical education, says:—"If one watched the stream of men, boys and girls which pours out daily at the close of day from a great city factory, the question may well be asked, Are they superior to the savage in all things, and are there no points in which the barbarian could claim some advantage over his modern descendant? In the face of a marvellous social, moral and intellectual development we are apt to lose sight of the fact that man is an animal, that he cannot yet do without a body, and that a strong receptacle for the mind is better than a frail one." This fact has recently been emphasized, not only throughout the British Empire, but also in the United States, when large and sudden demands were made for men to engage in active warfare, that it was found that many of our young men were not able to comply with the standards of the War Office Department. It was not a case of young men lacking in intellect, but being found unsuitable even to assume the duties of a soldier for home service.

The following extracts from the report of Sir Wm. Taylor, Director-General of the R.A.M.S., as also extracts from the report of the Inspector-General of Recruiting of Great Britain, indicate the physical condition of the young men of that country:—

"Only two out of five men enlisting remain in the army as effective soldiers at the end of two years' service, or 60 per cent. of the men offering themselves for enlistment are physically unfit for service. The want of physique thus shown to exist with regard to a large section of the community, is not only serious from its military aspect, it is serious also from its civil standpoint, for if these men are unfit for military service, what are they good for? As Lauder Brunton says: "Poor in physique as they all are, and poor in mental capacity and power of application, as many of them must be, what becomes of them? Many of them probably marry girls as weak as themselves and have children, some of them go to swell the lists of infant mortality, some joint the criminal classes, while others grow up more weak and incompetent than their parents.' "

The general deterioration of the physique of the working classes from which recruits must always be drawn, is causing much anxiety.

"From 1893 to 1902, 679,703 recruits were medically examined, and of this number 34.6 per cent. (234,912) were rejected as medically unfit for service, and 0.9 per cent. (5,849) broke down within three months after enlistment, while 2.1 per cent. (14,259) were discharged as invalids before completing two years of service; and as Sir F. Maurice says, as 60 per cent. are rejected of those who offer themselves to the recruiting officers, the number turned away must be appallingly large"; and what can we say of their physical condition—just think of it—only 25 per cent. of those willing to enter the regular service of the British army are found physically fit for service, the remaining 75 per cent. were rejected for being "under chest measurements," "under height measurements," and "under weight," as well as for "decay of teeth." All of which clearly indicate the operation of agencies antagonistic to a healthy, physical development.

So alarmed at the statistics presented have the leading men of that country become, that the National League for Physical Education has been formed under the Presidency of Sir Lauder Brunton, and amongst other pro-

posals made by him is the reduction of each hour of study to 40 or 45 minutes, the remaining 15 or 20 minutes of each hour to be devoted to play and physical drill.

We have perhaps not reached the same serious condition of affairs in Ontario as apparently exists in England; but we are certainly confronted with the fact that gradually our rural population is becoming urban, with the inevitable result that physical degeneration must sooner or later ensue.

Turning again to the child, we may briefly discuss the effects upon him of physical exercise. If a child of ordinary mental capacity were permitted to live in the association of educated people without systematic teaching of any kind, we would naturally expect when he reached manhood some intellectual development. The knowledge would have been gained by observation, experience and example. To be brief, he would be imperfectly developed mentally. What is true of the mental child is precisely true of the physical. We can leave neither the one nor the other to "nature," for he is not born into, nor does he ever live in, a natural condition. There are ever present the evils of environment. Therefore, "to leave a child to his own devices when not engaged in school work, is not to provide him with a sound or efficient education of the body."

What, then, are the effects of such an education upon the child? First, those upon the body.

1. Increase of size and muscle. 2. Strengthening of his tendons. 3. Increases size and strength of bones. 4. Invigorates respiration. 5. Augments size of thorax. 6. Increases size of heart. 7. Accelerates circulation.

In short, exercise means "growth and functional vigor and the maintenance of a high standard of organic life," and the truth of these statements has been demonstrated by many. An interesting case is that given by Lord Brabazon, in a paper in "Open spaces and Physical Education," read before the Sanitary Institution at York, 1886, which gives a report of the effects of six months' drill and gymnastic training given to twelve boys in the Much Wenlock National School from August 21, 1871, to February 26, 1872, when it was found that the average chest increase for drill was only eleven-twenty-fourths of an inch while the combined training of drill and gymnastics gave an increase of 1 5-6 inches.

In addition to these organic improvements, it is found that "he who has been well trained physically possesses not only a complete, but an intelligent use of his muscles. His movements are powerful and under absolute control, are precise, and capable of the freest and most elaborate adjustment."

When the exercise is carefully systematized and is both regular and moderate, it stimulates the circulation both of the body and of the brain and cerebral movements are materially aided; besides this, the general health is improved, the strength is increased and the capabilities for mental work enhanced.

Having briefly considered the effects of physical education upon the child, I would next refer to the chief elements of Physical Education:—

(a) The exercises should be carefully devised, systematically arranged, and suitably graduated.

(b) They should be carried out under guidance, and with suitable and efficient apparatus.

(c) The time for the exercise should be carefully selected.

(d) The exercise should, if possible, be taken in the open air, or in a large and well ventilated room, and the subjects properly clad.

From a consideration of these four elements, it is quite apparent that this branch of education cannot be carried out under the present staff of teachers.

A new staff of teachers must be employed, who could be engaged partly, from the various officers and non-commissioned officers of the permanent corps of the Militia of Canada, and from those who wish to qualify for commissions or certificates of instruction from the Infantry School, they being required after training at the various military schools, to put in a certain period of time instructing the boys of our schools. Further, this staff of teachers can be considerably augmented by the undergraduates of all our Universities who should give some of their spare time to this branch of education, so that in turn they may be able to give some service to the State by instructing our boys and girls. By some such method the work could be carried on with small cost, and greater efficiency would accrue to militia officers of all ranks. The officers of the permanent corps should constitute the permanent stan of instructors, they to have the supervision of detailing instructors either to different sections or schools, as the case may be.

The time for physical drill should certainly be taken from the present school hours, and I fully agree with the suggestion of Sir Laudon Brunton that at least 15 minutes off each hour should be given either to sport or drill, both of which should be carried on as far as possible in the open air. In this country, where buildings are necessary during the winter months, the rooms should be well lighted, roomy, well ventilated and warmed.

So far my remarks have been directed to physical drill during the school periods; but there is every year in the schoolboy's life a vacation during the months of July and August, when the opportunity is afforded for the gathering of the boys in camps on somewhat similar lines to those adopted by the "Boys' brigade." While in attendance at these camps, the time of the boys should be divided up between military drill, physical exercise, rifle practice, boating, swimming, and sport generally, and all under the careful supervision of qualified instructors. I can imagine no better training ground for the youth of our country than the well-regulated camps of instruction where physical instruction can be given to its fullest extent and under the best sanitary conditions.

The cost of this branch of education would be comparatively small if a system such as suggested is followed out. The maintenance of camps of instruction would be less than the present cost of militia camps, and all expenses should, I think, be borne by the Dominion authorities, the Provinces being paid a per capita grant according to efficiency. This suggestion may at first seem to be going too far, but under this system the Militia Department would be saved a great portion of the cost it now incurs in trying to train those of maturer years in similar work; and it can never reach the same standard of efficiency so long as it begins training at the period of life when the youth is least adapted by nature to receive it. For the improvement of ourselves as a nation physically and mentally some such system of instruction as outlined must be adopted.

Second Quarterly Report of Secretary, (1904).

C. A. HODGETTS, M.D.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN: Your Secretary has much pleasure in presenting this the First Quarterly Report for the year 1904.

Quarterly Returns of Contagious Diseases.

The prevalence of contagious disease during the three months ending March 31st, is shown by the returns received from the Division Registrars of the Province, in the following table, which for purposes of comparison contains both the case and mortality returns for the year 1903 for the same period.

	Cases.		Deaths.	
	1903.	1904.	1903.	1904
Smallpox	523	192	15	1
Scarlatina	1,565	865	298	49
Diphtheria	938	938	110	148
Measles	.....	112	15	5
Whooping Cough	.....	.....	22	29
Typhoid	185	89	63	55
Tuberculosis	.....	.....	560	564

It is particularly gratifying to note the marked decrease in the number of cases of scarlatina and smallpox during the quarter, as compared with those of the preceding year, and, what is of still greater moment ,the reduced mortality in both diseases: there were in the quarter 700 less cases, or a reduction of the case incident of 44.72 per cent., and in smallpox the reduction of 331 cases represent a decrease of 63.28 per cent., as compared with the first quarter of 1903. With the decrease in the number of cases there has been a marked subsidence in the virulence of the type of the case, mortality having fallen from 18.46 per cent. to 5.66 per cent.

A peculiar feature of the returns is the stationery condition of Diphtheria, 938 cases having been reported in each of the corresponding quarters, with, however, an increased death rate this year, the mortality in 1903 having been 11.72 per cent., while for 1904 it has been 15.77 per cent.

Non-Notification of Typhoid Fever

As indicated in my previous report, there is a disregard on the part of physicians generally, to section 89 of the Public Health Act, which requires notification to the Local Board of Health or the M. H. O. within 24 hours of each case of typhoid fever. This is clearly shown by a comparison of figures as found in the Annual Report of the Inspectors of Hospitals, with those of this Board for 1903.

There were treated in the Hospitals of the Province 1918 cases, while only 1,012 were reported to this office, with 298 deaths. It must be noted that these deaths are included in the total number of cases, although as a rule where Division Registrars report deaths from this disease they never give the number of cases, thus clearly indicating that the first intimation usually received of the disease being present in a municipality, is the death no-

tice. As the Committee on Epidemics has a report to make upon this subject, I will not discuss the question further than to point out the confusion which exists in the minds of many physicians in regard to notification and placarding, and would wish to emphasize the fact that the two are not synonymous. Section 89 of the Public Health Act required the physician to notify within twenty-four hours of each case of the disease, but Section 90 gives discretionary powers to the M. H. O. or Local Board of Health, as to what means shall be adopted in a municipality for the protection of the public, and, further, By-law 17, Schedule B, Rule 1, provides for the M. H. O. or Secretary of each Local Board of Health providing physicians with blank forms on which to report cases of typhoid fever, and Rule 4, while it requires the placarding of a house within six hours for scarlet fever, diphtheria, smallpox, cholera and whooping cough, does not mention typhoid fever, which fact clearly indicates that this Board, while it requires notification, does not consider placarding necessary in this disease at least. Incidentally, I would point out that the law requires both in whooping cough, although the law is followed out more in the breach than in the observance.

Need for Notification of Tuberculosis.

Before leaving the subject of the notification of contagious diseases, I would draw attention to the need of a system of notification of cases of Tuberculosis. For some years voluntary notification of Pulmonary Tuberculosis has been practiced by some of the English Boards, and the result of this experiment, together with the conclusions arrived at by the several Medical Officers of Health are most interesting and instructive.

Arthur Newsholm, M. O. H., Brighton, reports as follows on four and one-half-year's experience:

Year.	No. of Cases Notified	No. of deaths of Pulmonary Phthisis.
1899	113	180
1900	105	173
1901	153	164
1902	224	14
1903	165	103

from which figures he reasons that over 30 per cent. of the total cases are officially notified.

H. R. Kenwood, M. O. H. of the Metropolitan Borough of Stoke Newington, states that two years of the voluntary system in London has achieved much good, but there is great need for the adoption of further measures. In 1902 there was received one notification for every 2,000 of the population, whereas there must have been at least ten times as many cases. He presents the following illustration as indicating the paramount importance of preventative measures as compared with curative. Among (the poorer class of sufferers who are voluntarily notified):

Those dead at time of first visit	8 per cent.
Those dead within one year of notification	46 per cent.
Those dead within two months of notification	33 per cent.
Those dead within three months of notification	37 per cent.
Those dead within one year of notification	46 per cent.

Of the remaining cases, 10.5 per cent. had left the borough and could not be traced, and only six per cent. of all those notified had at any time been admitted to sanatoria or special hospitals.

Jas. Niven, M. O. H., Manchester, states that the City Council of that city adopted a system of voluntary notification, and although he does not give any figures, yet his report is full of instances of good work being done under this system. He says: "There appears to be little doubt that the administrative work now being steadily pursued in Manchester is producing a decided effect."

The system pursued in these municipalities and the objects aimed at are very similar in character, they may be briefly stated as follows:

1. The notified patient is interviewed and exact details are obtained as to duration of illness, possible sources of infection, places of residence, habits, etc.

2. Instruction as to personal precautions, etc., both verbal and printed.

3. A careful sanitary inspection is made of each house in which the phthisical patient lives.

4. The patient's room is cleansed and disinfected and on vacation of premises or death of the patient this is always done.

5. The gratuitous supply of disinfectant when necessary or advisable.

6. Periodic visits to see if the precautions advised are carried out.

7. Advantage is taken of the information gathered with respect to the occupation of the patients, to communicate with masters of factories and workshops with a view to having notices posted with regard to expectoration.

8. And in some instances where the "Borough or Municipal Sanatarium" exists, patients are admitted for a month or two into such institution as their means of livelihood will permit.

The following being the chief advantages of such a short sanatarium treatment, viz.:

(a) Improvement of the patient's health.

(b) During absence from home the same could be cleansed, and the family freed for a time from infection.

(c) The patient would have received instructions and become trained in the essentials necesary to prevent infection of others.

These, and many other minor advantages which will suggest themselves to a student of the question, are the result of a voluntary notification which have accrued only to a small percentage of the population of these municipalities, it is little to be wondered at that there is a wide and well-grounded feeling that this makeshift method should give way to one more wide reaching in extent and one that will bring all cases under the notice of the local health authorities, whereby greater exactness will be secured in all that pertains to Tuberculosis.

It has been objected to that the term "compulsory notification" as applied to "Tuberculosis" is objectionable, and Clifford Allbut has suggested the term "systematic notification," as by doing so there would be removed from the minds of the public the details which at present surround the term when applied to scarlet fever, smallpox and other of the acute contagious diseases, especially quarantine and placarding, and thus the very object we wish to attain will be thwarted by the concealment of cases.

The fact must not be lost sight of that while Tuberculosis may be classed as a contagious disease, yet it differs from the others in this respect:

1st. The apparently longer incubation period.

2nd. The long average duration of the disease.

3rd. The facility with which infection can be limited, hence the preventative measures suitable for the efficient handling of the acute exanthemata are not in every particular applicable to Tuberculosis. Certain it is the crowded home is now and for a long time will remain the only place available for

the larger number of tuberculosis patients, and as these must be considered the chief centres for the spread of the disease, it is apparent that some system adopted whereby local authorities generally may (1st) become notified of the tubercular patient, and, having received the notice, that they (2nd) be authorized to institute preventative measures to safeguard the general public, and (3rd) provide if necessary for the patient.

Jas. Niven, M. O. H., Manchester, referring to the good results following the administrative work under voluntary notification, says: "But there are two directions in which its value could be greatly increased. One is compulsory notification, the other is the provision of isolation hospital for infective cases more or less advanced, to which, in the judgment of the M. O. H., they can be removed when they are a source of danger."

Drs. Kenwood and Taylor, writing on this subject in London, advocate the following provisions:

1. Compulsory notification of all cases by the medical practitioner in attendance.

2. Power on the part of the sanitary authority to insist on isolation at home or in hospital, for so long a time as necessary.

3. Expressly stated powers to insist on the cleansing and disinfection of premise whenever necessary, and on the invariable disinfection of sputum.

They add: "An economic error is committed by any community which erects institutions for the treatment of what are, generally speaking, the less dangerous cases, with at best a poor prospect of cure, while doing nothing for the isolation of the more dangerous cases, which may be responsible for the infection of many fresh units, for there is no malady to which the dictum "prevention is better than cure" applies more aptly.

The only enactments which make notification compulsory are, so far as I am aware, (1) the recent measure approved by the Imperial Parliament of Great Britain, which grants that power to the municipality of Sheffield.

(2) The law of the Province of Quebec, which requires notification within 24 hours of each case when it reaches the stage of suppuration and expectoration, it is as follows:

Article 50. Whenever the head of any household or of any establishment whatever ascertains that any person dwelling in his home or in the establishment under his control has tuberculosis, which has reached the stage of suppuration and expectoration, he shall within twenty-four hours notify the same to the municipal sanitary authority of the locality in which he resides, or has his establishment.

Article 51. Wherever any physician ascertains that any person whom he is called on to visit is infected with any of the diseases set forth in Article 50, such a physician shall, within 24 hours, give notice thereof to the municipal sanitary authorities of the locality in which such diseased person may be.

Article 52. The notification given by one of the persons obliged to give the same, exempts the others from giving it.

(3) In New York City a system of voluntary notification was instituted by the Department of Public Health in 1894, which was extended to 1897, since which date all institutions and physicians have been required to report cases, and a report from that city on the question recently states that:

"The reports from institutions are practically completed, and the compliance of physicians though still far from universal, is steadily increasing, and last year more than 13,000 new cases were reported.

In this connection I cannot do better than quote the resolution on the subject, passed at the Eleventh International Congress of Hygiene and Demography, held in Brussels in 1903.

"That the prophylaxis against tuberculosis is more especially the duty of the public authorities by means of a rigorous application of the laws and by regulations concerning the salubrity of habitations; by means of the police sanitary measures prescribed by the laws; by means of severe legislation on over-pressure and the duration of the hours of labor (in regard to which it is very desirable that there should be an international agreement; and finally by extending the communal, cantonal, or district by-laws, which would be inspired by the local necessities and the interests of the benefit societies and trades."

In this Province, with an annual death roll of over 2,000 from tuberculosis, and untold thousands in various stages of the disease, I am of the opinion it is proper this Board should consider the adoption of some system of notification and registration of all cases of tuberculosis, and further, it should urge upon the Local Boards of Health the great necessity that exists for the erection of Municipal Sanatoria for the treatment of advanced cases. There is great need for the Provincial Board to take the lead in this important question where heretofore philantropists and proprietory sanatorians have been forerunners. The question is primarily: 1st, Sanitary, 2nd, Economic, 3rd, Social, and for these reasons should demand our earnest attention.

Inspection for Contagious Disease.

During the quarter there have been many calls to visit municipalities for the purpose of diagnosing cases of suspected smallpox, and in every instance where possible I have complied with the request and assisted the local authorities. I find that the mild character of the disease, presenting as it does many atypical symptoms, considerable difficulty is still experienced by practitioners generally in arriving at a correct diagnosis. Of the several outbreaks, I would refer to that at Niagara Falls, where a lady attended a progressive euchre party when in the early eruptive stage, and although over 60 persons were exposed, only one person unsuccessfully vaccinated, and the only one not vaccinated after exposure, contracted the disease.

The outbreak amongst the students of the Ontario Agricultural College was due to a student who was exposed in some unknown manner to smallpox during vacation developing the disease in a mild form after his return to college. The disease in his case not being observed and running its course, with the result that four students were attacked. When it was thought that all danger had passed, a case of varioloid was reported, when I again made a personal examination of the students I found that another student who had been suffering from measles at the time of the first quarantine being imposed, developed smallpox between the time of his leaving the measles ward and a few days after the return of the first case from the smallpox hospital. This boy, although there were a number of pustules along the line of the hair, two in the ear, and one or two on the face, with many more on the wrists and body, was not observed, and he infected the student who had varioloid. As a precaution I insisted upon the examination of each student by the Medical Officer of the college for the period of one month. I might state that both students and employees were re-vaccinated.

Experimental Sewage Station.

I would suggest to the Board the necessity which exists for the establishment of at least one Experimental S. Sewage Station, at a point convenient to the Laboratory, the experiments conducted here, would enable this

assist the cities and towns of the Province in solving a question which is not only of vital importance from the sanitary standpoint, but is of untold economic value to the state. To initiate and carry on such a work would require an additional monetary grant, but I am satisfied its importance outweighs any objection that can be raised on this score.

Mr. K. F. Campbell, M. Inst. C. E., in a paper on Experimental Treatment of Sewage Containing Trade Waste at Huddersfield, England, read before the Sanitary Institute of Great Britain, says:

"It is now generally recognized that an investigation into the character of the sewage must be made before a method for its purification is decided upon, and the importance of, and need for, constant and continual study of this question was expressed by the Eleventh International Congress of Hygiene and Demography, held in Brussels on the following resolutions on Sewage and Sewage Treatment.

"That the divers processes for the biological purification of the sewage of towns and waste matters from manufacturing or industrial establishments are connected with all the general principles the application opens out a new and fruitful era in regard to the sanitation of towns and watercourses. Whenever engineers, hygienists, manufacturers, or municipalities have to deal with the problem of the purification of sewage and waste water from factories, etc., they should seek inspiration from the above processes, and may derive considerable benefit therefrom, and this whether they employ new bacteriological processes that are already known and applied.

That the separate system and the combined or mixed systems can each be usefully employed, according to the circumstances of the case. It is only after both methods have been carefully studied and compared in each particular instance, and when the advantages and the inconveniences of the systems as applied to the local peculiarities have been submitted to full examination, that the sanitary engineer will be able to and will be justified in attempting to formulate conclusions.

Miscellaneous.

Legal Decision. I have much pleasure in stating that the action brought against the Local Board of Health of the Town of Brockville and this Board, as represented by your Inspector, has after many delays been finally settled. A Miss Raycroft entered action in 1902, claiming $2,000 damages by reason of her having smallpox. The facts, briefly stated, are as follows: A case of smallpox occurred in the house of Mr. McLaren where Miss Raycroft was a domestic. At the request of both Mr. McLaren and the local authorities, I was sent there by Dr. Bryce, found the family in quarantine, confirmed the diagnosis previously given by Drs. Cornell and McAuley. On making further enquiries as to the course of infection I discovered that Miss R. had been ill about three weeks previously and had a rash, which rash upon examination I declared was smallpox. As a result she went to Isolation Hospital with Mr. McLaren's boy, disquamation not being quite completed. Instead of the local authorities giving her several antiseptic baths, which would have cleaned her up, she was detailed to attend to a woman suffering from the disease in the semiconfluent form, and 16 or 18 days after admission she had an attack of varioloid so mild in character that she was discharged from the hospital twelve days after the onset.

The case came to trial before Justice Street last February. After hearing the case of plaintiff, his Honor dismissed the jury and ordered a nonsuit.

The second case is that tried before Chief Justice Falconbridge, being action brought by the proprietor of an hotel in Ridgetown against the L. B.

of H. for damages by reason of the M. H. O. keeping his place of business closed while smallpox patients were treated therein, instead of being removed to a hospital. If this rather remarkable judgment holds then, this Board should consider the advisability of changing the Act whereby the public are properly protected in similar cases in the future. The papers in this connection, together with the finding of the Judge, have already been submitted.

Canadian Association for the Prevention of Consumption and Other Forms of Tuberculosis. At the request of the Honorable the Provincial Secretary, I had the pleasure of attending this fourth annual meeting in Ottawa on April 20th and 21st ultimo. The attendance was the smallest yet registered, although delegates were present from B. C. and P. E. I. A most interesting paper was presented by Dr. Ravenal, of the Phipps Institute, Philadelphia, on the relationship between Animal and Bovine Tuberculosis, the doctor detailed some of the experiments made by himself, and he stated that it was his opinion that the two forms were identical.

On the initiative of Dr. Fagan, Sec. of British Columbia Board of Health, it was decided to interview the Premier of the Dominion to request the Dominion Government to grant material aid to the several Provinces for the purpose of the erection of a Sanatoria. A large deputation preferred the request on Friday, 22nd. Sir Wilfrid expressed his sympathy with the movement, but stated that even if he were a born humanitarian, yet in his official capacity he was bound by the British North American Act, which relegated public health to the Provinces. He would, however, consult the Minister of Justice to ascertain if the Act could be stretched. In view of the small attendance at the meeting, it would be certainly wise for the Executive Council to consider holding the Annual Meeting at different cities in the Dominion.

Annual Report. The publication of the 22nd Annual Report will be somewhat delayed, owing to the destruction of the paper and type by the recent fire in this city, but I am pleased to say the MSS. being intact, no change will have to be made in the resetting.

Sanitary Inspectors. With the installing of the septic tank system and subsequent disposal of sewage by contact beds or otherwise in various towns and cities of the Province there arises the necessity of having the same placed in charge of properly skilled men, otherwise what is a good system will in the near future fall into disgrace, and perhaps call down upon it public criticism, simply for the reason that no intelligent man has been placed in charge of the same. To meet this want and also to assist municipalities in securing the services of intelligent Inspectors for the performance of sanitary duties, I would direct the attention of the Board to the fact that the Sanitary Institute of Great Britain has for some years granted certificates for Inspectors of nuisances, etc., in Great Britain, and that recently centres for examination have been established in Sydney and Montreal, and I bring the subject before the Board for its consideration.

Bulletin. Before concluding I would suggest the wider distribution of the Bulletin by extending the mailing list to include all physicians in the Province—at present the issue is 2,000 monthly. To reach all those interested and to whom the paper should be sent would require the issue to be increased to 5,000 monthly. At the same time, I would suggest a slight reduction in size of the sheet with an increase to eight pages, or better still that the report be published quarterly.

Regulations re Unorganized Districts. At the close of the winter's work in the lumber camps I have the pleasure of stating that only two outbreaks of smallpox have occurred in the unorganized districts of the

Province during the winter of 1903-4, and in both instances the preventative measures adopted were carried out by the companies immediately concerned.

The employment of medical men, who devote their whole time to the work and who reside in the camps, is a growing feature in the evolution of camp sanitation, and is, I am pleased to state, meeting with the approval of the employees and is greatly appreciated by the employers.

The splendid results which have followed the introduction of the Sanitary Regulations in Unorganized Teritories, by the Act of 1901, are strikingly shown in the case of W. & A. McArthur Co., Collin's Inlet, who in the winter of 1902, were put to considerable trouble and expense, through the breaking out of smallpox in one of their camps.

The medical officer of the company, Dr. M. H. Langs, reporting to the Department on the camps, states that:

"I beg to report that there are in the W. & A. McArthur Camps at Beaverstone, 384 men, 6 women and 8 children; and all these have given satisfactory evidence of recent successful vaccination—or have been vaccinated by us—except 5 men, of whom I am not certain. These five men are in our most remote camp—they came in here from French River since the New Year, and have hitherto escaped our inspection. I was speaking with the foreman of this particular camp this week, and the five men in question will be inspected, and if need be, vaccinated during the coming week, or they will be dismissed from the camps. The plan followed by this company during the present season, has been to require "vaccination protection" from all men, or dismiss them. We have kept a strict watch upon every man arriving at these camps, to avoid if possible, the introduction of any infection. The company is endeavoring to carry out these Regulations to the letter. Certainly the Regulations are enforced as well as they can be under the circumstances. We carry a stock of vaccine sufficient for any emergency, and should smallpox appear in any camp, every man in it would immediately be re-vaccinated and the camp quarantined. Furthermore, upon by recommendation, in addition to the hospital facilities of which I told you, the company have prepared four double-walled tents with stoves and furniture, ready to be pitched in any one of the five camps.

"Now I have the pleasure of reporting that our camps are quite free from smallpox or other contagious disease."

This report is most satisfactorily, and is certainly reassuring from the fact that in those camps where an honest endeavor is being made to enforce the Regulations, there is almost absolute protection to neighboring municipalities, and the men themselves are receiving medical care which hitherto has been unknown.

All of which is respectfully submitted.

CHAS. A. HODGETTS.
Secretary.

Laboratory Report for the Quarter Ending January 31st, 1904.

By J. A. AMYOT, M.B.

To the Members of the Provincial Board of Health of Ontario:

SIRS,—I have the honor to present you with the following condensed report of the work done in the laboratory of the Provincial Board during the quarter year ending March 31st, 1904.

Summary of Specimens Examined During January, February and March.

Municipalities.	Diphtheretic swabs.				Tuberculous Sputa.		Typhoid Bloods.		Miscellaneous specimens.	Waters.		Total number per month.
	Release.		Diagnosis.									
	Plus.	—	Plus.	—	Plus.	—	Plus.	—		Chemical	Bacterial	
Jan. 95	7	20	34	32	15	68	4	14	6	15	17	217
Feb. 98	16	16	29	41	21	65	11	27	18	0	6	249
Mar. 104	22	19	24	34	42	87	10	20	19	8	26	311
	45	55	87	107	78	215	25	61	33	32	49	787
	100		194		293		86		38	81		

There follows, with the names of the municipalities from which the specimens came, a detailed table of the general character of the specimens, with special comments for each month.

Report from Laboratory of Provincial Board of Health for the quarter ending March 31st, 1904.

Municipalities.	Diphtheretic swabs.				Tuberculous sputa.		Typhoid bloods.		Miscellaneous specimens.	Waters.		Total number for month.
	Release.		Diagnosis.									
	Plus.	—	Plus.	—	Plus.	—	Plus.	—		Chemical.	Bacterial.	
Algoma:												
Webbwood					1							1
Brant:												
Burford					1							1
Oshweken			1			1						2
Paris		2	1	5								8
Bruce:												
Kinloss						1						1
Kincardine						1						1
Lion's Head			7	3								10
Paisley			1		1	2						4
Port Elgin					1	1						2
Pinkerton						1						1
Tara					1	3						4
Underwood						1						1
Carleton:												
Carp						1						1
Metcalfe			1									1
Ottawa							1					1
Dufferin:												
Shelbourne								1				1
Elgin:												
Shedden				1								1
Essex:												
Belle River						1						1
Essex					1	2						3
Kingsville						2						2
McGregor								1				1
South Woodsley					2	1						3
Wheatley				1								1
Windsor						2						2
Frontenac:												
Kingston						3						3
Sharbot Lake						1						1

Report from Laboratory of Provincial Board of Health.—Continued.

Municipalities.	Diphtheretic swabs.				Tuberculous sputa.		Typhoid bloods.		Miscellaneous specimens.	Waters.		Total number per month.
	Release.		Diagnosis.									
	Plus.	—	Plus.	—	Plus.	—	Plus.	—		Chemical.	Bacterial.	
Grey:												
Durham					1							1
Meaford				1		2						3
Maxwell				1								1
Owen Sound				1		1						2
Rocklyn				1		1						2
Haldimand:												
Cayuga					1	1						2
Dunnville						5	1	2				8
Fisherville						1						1
Halton:												
Milton						1						1
Oakville			1								2	3
Huron:												
Clinton				1								1
Goderich						2						2
Seaforth				1								1
Hastings:												
Belleville	2		1			3						6
Bancroft						2						2
Frankfort						1						1
Marmora						1		2				3
Marlbank						1						1
Madoc					4							4
Shannonville						2						2
Stirling					1							1
Trenton						3						3
Kent:												
Blenheim						1						1
Chatham					3	8			1			12
Wallaceburg					1	3						4
Lambton:												
Arkona					1			1				2
Florence						1						1
Inwood					1							1
Sarnia			1			1	1					3
Thedford				1	1							2
Watford		4				1						5
Wilkesport		1		1		1						3
Lanark:												
Almonte					1							1
Lanark						1						1
Perth			1	3								4
Leeds and Grenville:												
Algonquin					1	3						4
Brockville	1					3		1	1			6
Frankville							1	1				2
Lyn			1									1
Lennox and Addington:												
Bath			1		1	1						3
Camden				1								1
Mountain Grove						1						1
Napanee	2				5	3						10
Newburgh						2						2
Yarker						2						2
Lincoln:												
Beamsville			1			1	1					3
Caistorville								14				1
Grimsby										2	2	4
Jordan		1		1		1						3
St. Catharines				2	5	8	1		1			17
Middlesex:												
Glencoe									1			1
London									2	18	14	34
Muskoka:												
Bracebridge				1	1	4						6
Huntsville	1	1	8	7	4	6						27
South River						1						1
Norfolk:												
Delhi					1							1
Simcoe				1	4	6		1				12
Vittoria					1							1
Northumberland and Durham:												
Bowmanville	2		1			1		1				5
Blackstock						1						1
Campbellford		1				1						2
Castleton						2						2
Cobourg				1		1		2				4
Millbrook			1									1
Orono									1			1
Port Hope			1	1		2					2	6

Report from Laboratory of Provincial Board of Health.—Continued.

Municipalities.	Diphtheretic swabs.				Tuberculous sputa.		Typhoid bloods.		Miscellaneous specimens.	Waters.		Total number for month.
	Release.		Diagnosis.									
	Plus.	—	Plus.	—	Plus.	—	Plus.	—		Chemical.	Bacterial.	
Ontario:												
Brooklin						2						2
Brougham						1						1
Bannington						1						1
Claremont						1						1
Oshawa								1				1
Pickering				2								2
Port Perry		1				2						3
Uxbridge			1	2	1	2						6
Whitby			1		3	1				1		6
Oxford:												
Ingersoll							1					1
Mt. Elgin				1								1
Plattsville						2						2
Tillsonburg										1	1	2
Woodstock						2		2	1			5
Parry Sound:												
Burk's Falls					2	1	1	2			2	8
Parry Sound				1				1				2
Powassan						1						1
Rosseau						1						1
Trout Creek						2						2
Peel:												
Alton						1						1
Woodhill						1						1
Perth:												
Fullarton						1						1
Mitchell			1									1
Stratford									3			3
Peterboro':												
Gooderham				1								1
Havelock			3	1		1		1		6	6	18
Norwood						3						3
Peterboro'	3	2	4	1		2						12
Westwood						1						1
Prince Edward:												
Picton				2								2
Renfrew:												
Arnprior					1							1
Calabogie						1						1
Cobden					1							1
Douglas	1		1			3						5
Eganville	1		1									2
Pembroke						1				2	2	5
Renfrew			1	1	2	3			1			8
Simcoe:												
Allandale			1			1		1				3
Barrie			1	3		2	3	3				12
Beeton	3	3										6
Bond Head												
Bradford								1				1
Churchill								2	1			3
Collingwood				1								1
Edgar				1	1	3						5
Orillia			3									3
Thornton						2						2
Stormont, Dundas and Glengarry:						1						1
Dickinson's Landing						2						
Mountain			1			1						2
Osnabruck Centre						1						2
Victoria:												1
Fenelon Falls	1			2		2						5
Kinmount	11	2		1								14
Lindsay										2	4	6
Little Britain				1								1
Manilla					1							1
Oakwood					1	1						2
Waterloo:												
Baden				1								1
Berlin					1	2						3
Galt				1		3	1	3			1	9
Hespeler						2						2
New Dundee				1								1
New Hamburg	1		1									2
Preston						2			1			3
Waterloo								1				1
Wellesley			1									1

Report of Laboratory of Provincial Board of Health,—Concluded.

Municipalities.	Diphtheria swabs.				Tuberculous sputa.		Typhoid bloods.		Miscellaneous specimens.	Waters.		Total number for month.
	Release.		Diagnosis.									
	Plus.	—	Plus.	—	Plus.	—	Plus.	—		Chemical.	Bacterial.	
Welland:												
Brown's Nurseries										1	1	2
Fenwick					1							1
Niagara Falls		1	1	1		2						5
Port Colborne									1			1
Ridgeway			1	2								3
Thorold						1						1
Welland						1						1
Wellington:												
Alma						1						1
Erin					1			4	1			6
Fergus					2	2						4
Guelph	3	6	2	4		4		3				22
Harriston		3	1									4
Moorefield						1						1
Morrisson				1								1
Palmerston				1		2		1				4
Wentworth:												
Dundas						2		2				4
Freelton						1		1				2
Hamilton	2	4	3	1		1	2		1			14
York:												
Aurora	3	2	2		1	1						9
Bracondale	2	1	1			1						5
East Toronto			1									1
Eglington			1									1
Markham						1						1
Mimico			2			1	1					4
Richmond Hill					1	3						4
Schomberg					1							1
Toronto	3	7	12	21	7	10	8	14	16		12	110
Toronto Jct	3	6	5	4	1	3	1					23
Weston	4	4	8	8			2	2				28
Totals												787

Three important bits of work were begun during the past quarter, viz., an examination in a tentative way of canned fruits and vegetables and of jams to look for preservatives, poisonous metals, flavorings, adulterations and fillers, also a systematic daily examination was begun of the Toronto city water, and also an investigation into the values of certain antiseptics and methods used in the sterilization of cutting instruments.

JOHN A. AMYOT, M.B.,
Director of Laboratory.

Reports of Committees of Board

AS PRESENTED AT MEETING HELD MAY 4th AND 5th, 1904.

Report No. 1 (1904) of the Committee on Sewerage, Re New Proposal for the Sewerage System of the Town of Oshawa.

To the Chairman and Members of the Provincial Board of Health of Ontario:

GENTLEMEN,—Your Committee on Sewerage begs to report as follows:—

The approval of the Board having been asked by the Commissioners of the Town of Oshawa for the system which has for its object the emptying of the sewage into a small creek which flows to the east of the said town in preference to the system submitted to this Board on February 7th, 1901, by the then engineer in charge, Mr. Speakman, which had an outlet to the west into the Oshawa Creek, which plan was approved of under conditions as stated in the minutes of the Board under date of February 7th, 1901, which conditions are herein cited.

Your Committee begs to report that after a careful consideration of the question, and upon reports made by two of its members who have visited the town, consulted with the Commissioners and gone over the ground in company with the Engineer, Mr. Chipman, that the Board should reaffirm its approval of the general principles contained in its resolution of February 7th, 1901, as follows:

Moved by Dr. Oldright, seconded by Dr. Bryce, that the Board, having examined the plans and heard the statement of the engineer to the effect that provision can be made for sufficiently purifying the effluent from the main sewer of the proposed system of sewerage of Oshawa; and that it will be discharged into a creek with a constant flow of at least 5,000,000 gallons daily, does approve of the scheme; and is of the opinion that the difficulty of safely disposing of the sewage by the alternative eastern outlet, would be much greater and more expensive.

That the plan for the disposal of the sewage in the creek to the west be approved of:

1. On the ground of much less expense in construction than the pipe to the east, with a continued drain to the lake necessary to carry the effluent from the filter-beds.

2. That the levels make it possible to arrange for a septic tank and filter-beds to the west.

3. That the convenience of supervision will be much greater in the west than in the east outlet.

The Board further desires it to be understood that in approving of the disposal of the town sewage in this manner, the Municipality of the Town of Oshawa must at all times maintain a degree of purification of the sewage satisfactory to the Provincial Board of Health, and that the Council assumes the responsibility for any neglect on the part of the municipality.

Further, that as a condition of the approval of this system of sewerage, a Town By-Law providing a Plumbing By-law, similar to that passed by the Provincial Board of Health in 1897, be adopted and enforced by the Town Council.

The Committee would now recommend that the Board do not approve of the proposition to discharge the sewage of the town into the eastern creek or water channel in the manner proposed, that is, an open ditch, even after the passage of the sewage through a septic tank.

The objections to the scheme now proposed in connection with the eastern outlet are:

(a) The smallness of the creek. We saw it under the exceptionally favorable circumstances that there had been two days' rain a couple of days before, and in the spring season, and even at this time it seemed to us, upon observing the stream where it passed through a narrow chasm at the rate of two or three feet per second, that it could be made to pass through an eight-inch pipe.

(b) The swamp and boggy nature of the ground through which the sewage would flow before it reached the outlet into the lake. In places the water was so spread out that it appeared to lose itself in morass, and the current to be almost imperceptible.

(c) The probability which exists of this becoming a nuisance to the neighborhood may be readily inferred from the above description of the present watercourse. It has been proposed to remedy this by straightening and ditching, but it will readily be seen that even with this improvement there is not enough water even now, much less in the dry season, to sufficiently dilute the sewage to prevent its becoming a nuisance. And even if the whole watercourse were acquired by the Municipality of Oshawa, there would still remain the nuisance of pollution of the air far beyond the limits of the property so acquired.

(d) If it be desired by the Municipality of Oshawa to carry the sewage down to the lake in a closed pipe or sewer, there can be no objection from a sanitary standpoint, and this alternative would be an improvement on the emptying of the sewage into the Oshawa Creek or western channel.

It should be further stated that so far as the Committee on Sewerage and Disposal of Sewage is aware, the scheme of water supply for the town has not been submitted to the Provincial Board of Health. The attention of the Board is drawn to the fact that at the time when the disposal of the sewage was discussed in 1901, the question of water supply from springs north of the town was considered.

If it is now intended to take the water supply from Lake Ontario, the question of the relative positions of the sewage outlet and the water intake, and the means to be adopted to protect the character of the water supply has still to be considered.

This question has not been referred to your Committee, and no data was given us, and we have not dealt with it.

All of which is respectfully submitted.

(Signed) Wm. Oldright,
Alex. Thompson,
Chas. A. Hodgetts.

Adopted May 6th, 1904.

Report No. 2 (1904) of the Committee on Sewerage, Re the Proposed Extension of Port Hope Sewerage System.

To the Chairman and Members of the Provincial Board of Health of the Province of Ontario:

Gentlemen,—Your Committee begs to report as follows on the proposed extension of the sewerage system of the Town of Port Hope, as submitted in the accompanying plans:

The proposed extensions are a continuation of the present sewerage system of the town, and along the lines approved by this Board upon the report made by the Committee on Sewerage, May 28th, 1903.

Approval is now asked for the construction of a six-inch sewer on both Church and Baldwin Streets, the length being 500 feet, and the cost approximately $200.

The main sewer on Walnut Street was constructed last year, and was during construction sunk lower than was at first intended, so as to permit of the building of sewers on Baldwin and Church Streets.

It is also proposed to construct a six-inch sewer on King Street, from the ridge at Shaw Street north to Ward Street, and along Ward Street southwest from Hope Street to Mill Street, thence to Smith's Creek, with sewers also on Princess and Armour Streets, as shown in the plan.

The total length of these sewers will be 1,500 feet, and the cost approximately will be $400.

It is proposed that sewers be built by private citizens under authority of the Town Council and the supervision of the Street Surveyor.

It is recommended that the approval of the Board be granted subject to the usual provisions and safeguards as stated in the Report date May 28th, 1903.

All of which is respectfully submitted.

Wm. Oldright,
Alex. Thompson,
Chas. A. Hodgetts.

Report No. 3 (1904) of the Committee on Sewerage Re Berlin Sewage.

Gentlemen,—Your Committee is much gratified from a perusal of Report and papers to see that the Local Board is taking active steps to improve the sanitary situation, but feels that, being under the jurisdiction or oversight of the Courts, the matter is thereby removed for the time being from the jurisdiction of the Provincial Board of Health, and it recommends that this view be presented to the Commissioners and other municipal authorities of Berlin, with the assurance, however, that the Board continues to take a warm and sympathetic interest in the working out of the sewage problems of that town, and is prepared to give any assistance that may be compatible with the view expressed, and to co-operate with the aforesaid authorities as soon as the Courts have made their deliverance or requested such co-operation.

All of which is respectfully submitted.

Wm. Oldright,
Alex. Thompson.
Chas. A. Hodgetts.

Report No. 4 (1904) of the Committee on Sewerage Re the Proposed Draining of the Brown House, Aylmer.

To the Chairman and Members of the Provincial Board of Health of the Province of Ontario:

Gentlemen,—Your Committee is of the opinion that before the Board gives its approval to any such plan as submitted, where the future sanitation

of a town may, and probably will, be gradually involved, the municipal authorities should submit the same as part of some general plan, with all the data accurately prepared and stated which are necessary for the intelligent consideration of the same, and, therefore, recommend that the application be referred back to the Town Clerk of Aylmer for such action to be taken.

WM. OLDRIGHT,
ALEX. THOMPSON,
CHAS. A. HODGETTS.

Report No. 1 of the Committee on Epidemics.

ON TYPHOID FEVER AND CONSUMPTION.

To the Ontario Provincial Board of Health:

MR. CHAIRMAN AND GENTLEMEN,—Your Committee of Epidemics wish to draw your attention to the fact which is being more emphasized each month that there exists an almost entire disregard for those sections of the Public Health Act, which require that each and every case of typhoid fever (enteric) should be notified.

The sections of the Act relating to the notification of this disease are as follows:

86. Whenever any householder knows that any person within his family or household has the smallpox, diphtheria, scarlet fever, cholera or typhoid fever he shall (subject in case of refusal or neglect to the penalties provided by sub-section 2 of section 115) within twenty-four hours, give notice thereof to the Local Board of Health, or the Medical Health Officer, or by a communication addressed to him duly mailed within the above time specified, and in case there is no M. H. O., then to the Secretary of the Local Board of Health, either at his office or by communication as aforesaid. R. S. O., 1887, c. 205, s. 77.

89. Whenever any physician knows that any person whom he is called on to visit is infected with smallpox, scarlet fever, diphtheria, typhoid and cholera, such physician shall (subject in case of refusal or neglect to the penalties provided by sub-section 2 of section 115) within 24 hours give notice thereof to the Local Board of Health or Medical Health Officer of the municipality in which such diseased person is, and in such manner as is directed by rules 2 and 3 of section 17 of schedule B, R. S. O., 1887, c. 205, s. 80.

It is therefore quite evident that the Public Health Act requires that both the householder and physician in charge of a case of typhoid fever shall notify the local health authorities of each case within 24 hours, and for this purpose it is the duty of each Local Board of Health, either through its Health Officer or Secretary, to provide each medical practitioner in its municipality with blank forms, upon which to report any case. (Rule 1, sec. 17, schedule B, R. S. O.)

To remove misapprehension respecting the outcome of the notification of typhoid fever, should any such exist in the minds of members of Local Boards of Health or medical practitioners, your Committee deem it advisable to state that while the Public Health Act requires the householder and attending physician to report a case of typhoid fever, the Local Board of Health is not required to placard the house in which a person sick with this disease is lying. According to Rule 4, section 17, schedule B., R. S. O., placarding is required for scarlet fever, diphtheria, smallpox, cholera, or whooping cough, but it is not considered necessary for typhoid fever. Primary notification of typhoid fever by the householder and attending physician to the Local Board of

Health, and secondary notification by the latter to the Provincial Board of Health are required for the following reasons:

First. That inquiries may be instituted at an early date to discover the cause of the disease, such inquiries relating chiefly to the investigation of the water and milk supplies used by the infected person.

Second. That preventive measures may be adopted.

Third. That trustworthy statistical facts giving information as to the prevalence of the disease, its type, mortality, etc., may be recorded.

In the Bulletin of the Provincial Board of Health of Ontario for February, 1904, the following question is asked: Are typhoid fever cases reported? Replying to this question, the Bulletin states that the returns of typhoid fever by householders and physicians received during 1903 by the Provincial Board of Health amounted to only 1,012 cases. An extract is also taken from the statistics of typhoid fever given in the Annual Report of Dr. Chamberlain upon the Hospitals of Ontario, for 1903, which shows that 1,231 males and 687 females were treated for typhoid fever in the Ontario hospitals during the year.

Do the hospitals notify their cases of typhoid fever?

The figures just quoted show conclusively that they do not notify them. Now, admitting that an hospital is an excellent place in which to treat typhoid fever, a place which will not easily become a centre for the diffusion of that disease, the following facts also remain to be considered:

From the standpoint of hygiene, the Medical Health Officer of a municipality should learn the nature of the local conditions, which occasioned an attack of typhoid fever in a person living in his municipality, in order to exercise his preventive powers as promptly as possible.

A patient with typhoid fever is treated in some private house or in an hospital, either of which may be situated in the municipality in which the patient contracted the disease, or in another municipality of this Province. Should the patient be treated in a private house of the municipality in which the disease was contracted, single reports from the householder and attending physician will answer; if in an hospital, one from the medical superintendent would answer. If the patient is being treated in another municipality, similar reports would be called for, and, in addition, the Medical Health Officer of the municipality in which the patient is domiciled would also report to the Medical Health Officer of the municipality in which the patient was residing when he contracted typhoid fever. Notification of this nature would draw expert attention to the local conditions or circumstances which had occasioned the disease in question, and the Medical Health Officer of the municipality where the disease had occurred being informed of the possible source of the trouble would be placed in a position to exercise proper methods of prevention. There can be little doubt, therefore, that public health would benefit very much if such a system of notification were made obligatory, as the majority, if not all, of the cases of typhoid fever which occur in Ontario would be known, not only to the physicians or hospital superintendents who may have medical charge of them, but also to the Medical Health Officers of the municipalities to which they respectively belong.

It is reasonable to think that if superintendents of hospitals who have charge every year of a large number, perhaps the majority, of the typhoid fever cases in Ontario, were bound by law to notify these cases, in the way mentioned above, private medical practitioners would not be so likely to neglect their duty in this particular, but would learn to imitate so excellent an example.

Such a system of notification would inevitably lead to the extinguishment of unsuspected local conditions, which regularly produce typhoid fever, and

the irrelevancies which now exist between morbidity and mortality statistics of typhoid fever in Ontario would soon disappear.

Your Committee would, therefore, advise that the facts and figures embodied in this report should receive your careful consideration, and that any conclusions you may form relating to this matter should be drafted in the form of a circular and mailed as soon as possible to the Medical Health Officers, Local Boards of Health, medical superintendents of hospitals, asylums, etc., and to all the medical practitioners of this Province.

Your Committee would also advise that in the circular here referred to attention should be drawn to the fact that samples of drinking water are examined free at the Provincial Laboratory, and that persons desirous of having such examinations made should apply to Dr. J. A. Amyot, Bacteriologist of the Board, for properly sterilized bottles, in which the samples of water should be placed. Emphasis might also be given to the fact that physicians may forward samples of suspected blood to the laboratory in order to have the Widal test made.

It may be feared that the reporting of cases by medical superintendents of hospitals may cause reduplication, it being possible that physicians seeing the cases before admission to the hospitals may have already reported. The attention of Medical Health Officers would need to be drawn to this possibility, with the request that they look over the names of the persons reported to avoid re-duplication.

Your Committee also desire to draw your attention to a leaflet prepared by them and containing personal and general precautions suitable to prevent the spread of consumption. It is proposed to ask your endorsation of this leaflet, and if it is satisfactory to ask your permission to print copies for distribution throughout this Province. The following is the text of the leaflet:

Personal Precautions.

1. Consumption is contracted by taking into the system, chiefly through inhalation, the germ or microbe of the disease.

2. This germ is contained in the sputum or spit of the consumptive, and the minute droplets which he sprays into the air in coughing or sneezing. The germs may be inhaled directly through the air. When the sputum and droplets become dry they mingle with the dust, and, being inhaled with it, introduce the germs into the body, or the germs may be inhaled directly through the air.

3. The consumptive person, therefore, must not expectorate about the house or on the floor of any public building, cab, street car, railway carriage or other conveyance, nor on the street or other public place.

4. The consumptive must not expectorate anywhere except in a spittoon kept for the purpose, which spittoon should contain water, to which a disinfectant has been added, preferably a 5 per cent. solution of carbolic acid, which is prepared by dissolving one ounce of carbolic acid in one imperial pint of hot water.

5. When absent from his own room, the consumptive should use a small, wide-mouthed bottle, with a carefully fitting cap (pocket spittoon), the contents of which when emptied should be destroyed and the receptacle carefully cleansed, being kept in boiling water for at least ten minutes.

6. A consumptive should not spit into a handkerchief, but, if not provided with spittoon, should use a piece of cloth or paper, which should be burned at the first opportunity.

7. Handkerchiefs, which may have been used, should be boiled one half hour before being washed.

8. Consumptives should not swallow their own phlegm as by so doing the disease may be conveyed to parts of the body not already affected.

9. Kissing by consumptives should be prohibited. When coughing, a consumptive patient should always hold a handkerchief in front of the mouth, and should avoid coughing in the direction of another person.

10. The greatest care should be taken to prevent the smearing of hands, face, clothing and bedclothes with the sputa. Should an accident of the kind happen, the parts should be immediately cleansed, and for this reason the clothing and wearing apparel of consumptives should be thoroughly disinfected before being used by others.

11. A consumptive should not hold a situation in which he is required to handle the food or wearing apparel of others.

12. A room occupied by a consumptive should not be swept or dusted. Such few floor rugs as are used should be frequently taken up and exposed to the sunlight, and also disinfected at intervals. They should, on no account, be shaken, beaten or swept. In cleaning such rooms wet cloths must be used to wipe the floor, woodwork, windows, furniture, etc., and these cloths should be frequently boiled. These rooms should be thoroughly cleansed at least once a month, in addition to the daily cleaning.

13. On a room being vacated by a consumptive, it should be thoroughly and completely disinfected. The wall paper (if any) should be removed, and the walls, ceiling and floor well washed with a disinfecting solution and well aired.

14. Special sets of spoons, forks, knives, plates, cups, etc., should be kept for the exclusive use of each person affected, and these articles should be placed for a few minutes in boiling water before being washed.

15. Milk and other articles of diet should not be permitted to stand in the bedroom of a consumptive; they should be brought to him in only such quantities as are required for immediate use.

General Precautions.

1. The special measures required for producing conditions destructive to the virulence of tubercle bacilli which may have found lodgment in a house, are, fortunately, those best calculated to preserve and improve the health of the inmates.

2. These are air, light, sunshine and dryness, which, while they aid in rendering individuals able to resist the establishment of the germ of the disease, at the same time are most destructive to its vitality.

3. Ventilation by means of fresh air is most important for the preservation of the health of children, as well as adults, fresh air preventing the development and spread of consumption. Ventilation is essential in factories, workshops, offices and houses, particularly when the air of such places is associated with gaseous fumes and fine dust.

4. The breath from the lungs contains foul organic matter, which becomes poisonous if rebreathed. Hence the air of living and sleeping rooms, work shops, schools, churches and public vehicles should be quickly changed, otherwise persons breathing it become weakened, and thus may become predisposed to consumption.

5. Overcrowding is both dangerous and injurious to health, and should be avoided.

6. Windows should be made to open to the external air, they should be kept open day and night sufficiently to provide for a continuous supply of fresh air, but injurious draughts should be avoided.

7. Open spaces around buildings are necessary for the access of fresh air.

8. Rooms, staircases and passages should be frequently flushed with air by opening windows and doors. This rule applies equally to churches, school rooms, factories, hotels, public halls, as well as to the homes of consumptives.

9. All rooms should be kept clean, otherwise the air can never be pure. Cleanliness and good sanitary surroundings are essential for the prevention as well as the cure of the disease.

10. To protect against the germs of tuberculosis, as found in both meat and milk, these articles of diet should be subjected to a temperature of at least 180 degrees F. (60 C.). The former should be well cooked through, and the latter should be heated to at least 140 degrees F. or sterilized.

11. All bed linen and body linen should be disinfected before being sent to the wash.

12. The clothing, wearing apparel and other effects of a consumptive should either be destroyed or disinfected by superheated steam before being used by another.

13. Never put coins, articles of the toilet or other small objects in your mouth. Do not use a pipe, wind instrument or implement which goes to the mouth that has been in use by any other person.

14. The extent to which outdoor exercise and fresh air should be indulged in should be regulated by the physician in charge, as also the character of clothing to be worn and the daily dietary.

All of which is respectfully submitted.

J. J. Cassidy,
Wm. Oldright,
Chas. A. Hodgetts.

Reports of Contagious Diseases

FOR SIX MONTHS ENDING JUNE 30th, 1904.

By G. B. LINDSAY, Chief Clerk.

The great reduction in cases and deaths of smallpox and scarlet fever for the first six months of this year as compared with the same period last year is most gratifying.

The number of smallpox cases reported for the six months a year ago was 741, against 274 for the same period this year, or a reduction of 63.0 per cent., while the deaths dropped from 19 to 2.

The returns of scarlet fever show a similar condition, there being 2,548 cases, as against 1,290 cases, or 50 per cent. of a decrease, and the deaths show a greater decline, being 452 to 71, or 83.9.

Diphtheria cases remain much the same, being 1,537 and 1,568 for the respective periods, while deaths increased from 186 to 241, or 30 per cent.

Typhoid fever deaths have increased from 114 to 126, and the increase from deaths from tuberculosis is somewhat greater, being 44.

THE SECOND QUARTER the case decrease in smallpox in the second quarter of this year is 56.6, and scarlet fever 50.8, deaths, 55.1 per cent.

Diphtheria shows 32.8 case decrease, and 37.1 per cent. death decrease.

The returns of typhoid show an apparent case decrease of 32.3, and death increase of 13.6 per cent., but as a great number of typhoid cases are not reported, the case decline does not represent the true condition of affairs.

Tuberculosis increased from 564 to 642, but this may in part be due to the returns of Division Registrars being more accurately made.

The deaths from all causes for the first quarter is 6,948, and for the second quarter 6,523, or a decrease of 6.1 per cent.

Returns of cases and deaths for six months ending June 30th, 1904.

Months.	Small-pox.		Scarla-tina.		Diph-theria.		Measles.		Whoop-ing Cough.		Typhoid or Malaria.		Tubercu-losis.		Total deaths from all causes.	Rate per 1,000 per annum.	Population reporting.
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.			
January	103	....	380	24	382	58	32	2	25	7	39	23	179	179	2,200	13.1	2,013,648 92%
February	41	1	251	13	289	42	41	1	36	16	60	18	185	185	2,332	14.4	1,924,976 88.8%
March	48	....	234	12	267	48	39	2	45	6	65	18	200	200	2,416	15.1	1,917,081 87.1%
	192	1	865	49	938	148	112	5	106	29	164	59	564	564	6,948		
April	33	....	161	10	169	28	98	7	26	7	29	20	219	219	2,290	13.7	1,998,269 91%
May	10	....	128	7	204	29	107	2	4	3	42	32	227	227	2,331	13.7	2,038,083 93%
June	40	1	136	5	257	36	41	1	46	9	40	15	212	196	1,902	11.2	2,030,857 93%
	83	1	425	22	630	93	246	10	76	19	111	67	658	642	6,523		

Copy of Circular Sent to Medical Men

RE NON-NOTIFICATION OF TYPHOID FEVER.

Typhoid Fever—its Non-Notification and the Necessity Which Exists for a Compliance with the Law Which Requires Notification Within Twenty-Four Hours.

The fact is being more emphasized each month that there exists an almost entire disregard for those sections of the Public Health Act which require that each and every case of typhoid fever (enteric) should be notified.

The sections of the Act relating to the notification of this disease are as follows:

86. Whenever any householder knows that any person within his family or household has the smallpox, scarlet fever, diphtheria, cholera or typhoid fever, he shall (subject in case of refusal or neglect to the penalties provided in sub-section 2 of section 115) within twenty-four hours give notice thereof to the Local Board of Health, or to the Medical Health Officer of the district in which he resides, and such notice shall be given either at the office of the Medical Health Officer or by a communication addressed to him and duly mailed within the time specified, and in case there is no Medical Health Officer, then to the Secretary of the Local Board of Health, either at his office or by communication as aforesaid. R. S. O., 1887, c. 205, s. 77.

89. Whenever any physician knows that any person whom he is called upon to visit is infected with smallpox, scarlet fever, diphtheria, typhoid, or cholera, such physician shall (subject in case of refusal or neglect to the penalties provided by subsection 2 of section 115) within twenty-four hours give notice thereof to the Local Board of Health, or Medical Health Officer of the municipality in which such diseased person is, and in such manner as is directed by Rules 2 and 3 of Section 17 of Sched. B., R. S. O., 1887, c. 205, s. 80.

It is, therefore, quite evident the Public Health Act requires that both the householder and the physician in charge of a case of typhoid fever shall notify the local health authorities of each case within twenty-four hours, and for this purpose it is the duty of each Local Board of Health, through either its Health Officer or Secretary, to provide each medical practitioner with six blank forms upon which to report any case. See By-law 17.

The fact that it is statutory to report all cases of typhoid fever does not imply that it is necessary to placard the house in which it exists, for according to the same by-law, Rule 4, placarding is only required for scarlet fever, diphtheria, smallpox, cholera or whooping cough, and this precautionary measure is one that may not be resorted to by the Local Boards of Health, indeed, it is quite obvious that the Provincial Board of Health did not deem such to be necessary, but what it does desire is the systematic notification of all cases of typhoid fever, first to the local authorities, and, second, by the Local Boards to the central authority, for the following reasons:

First. That enquiries may be instituted early to discover the cause, chiefly the investigation of water and milk supplies.

Second. That preventative measures may be adopted.

Third. That intelligent statistical facts may be obtained as to prevalence, type, mortality, etc.

Medical Health Officers, Boards of Health, and physicians generally are reminded that samples of water are examined free in the Provincial Laboratory, and for this purpose properly sterilized bottles can be secured by application to Dr. J. A. Amyot, Bacteriologist of the Board, and to assist physicians in the early diagnosis of cases, samples of blood should be forwarded for the purpose of making the Widal test.

Interpretation of an Ordinary Water Analysis for Hygienic Purposes.

JOHN A. AMYOT, M.B., Bacteriologist of the Board,

The report on a sample of water examined in the Laboratory of the Provincial Board of Health of Ontario is usually sent after the following form:

Where collected from—John Smith's well.
From—Town.
Date of receipt—May 1st, 1904. Date of collection—April 30th, 1904.
How sent—By express.
From whom—James Jones, San. Inspector.
Name of Medical Health Officer—Dr. ————
Analysis begun—May 1st, 1904.
Findings:
Turbidity—permanent or temporary—temporary. Character ? ? ? ? ? ? —sandy with floculi. Microscopic wood fibre, much fibre cells, etc.
Color—Slightly yellowish.
Odor—Urinous.
Number of bacteria per C.C.—2,500.
Colon bacilli—Present.
Colonoid bacilli—None.
Other forms—Streptococci.
Chlorine—122 per million.
Free ammonia—.255 per million.
Albuminoid Ammonia—.935 per million.
Nitrogen as nitrites and nitrates—.850 per million.
Oxyg n consumed—15,550 per million.

REMARKS. This water chemically shows pollution, and bacterially shows infection with two forms of bacteria that are probably pathogenic and intestinal in origin. This water is dangerous as a drinking water.

Now, when such a report is presented, the one receiving it often retorts, saying, "Put that in English." They really know what it means, but do not take time to analyze it out. To begin with, I might say that waters are examined in the Laboratory of the Board for hygienic purposes only, that is, to see if they are fit to drink, or to discover if they are the cause of infection. Mineral waters in the general acceptation of the term are not examined.

These waters are examined gratis for cities and towns having water systems or proposing such, also for medical officers when they have reason to suspect that certain well or other waters are the source of disease, provided they are collected after the fashion required by the Provincial Board of Health. To private individuals a nominal fee of five dollars is charged, but examinations are made only when a sufficient cause is given.

The difficulties in interpretation usually begin at "The number of bacteria per C.C." The items before that require very little explanation, except in a hurried way. The time between collection and analysis, if prolonged, may give rise to considerable and varied changes, both chemically and bacterially, if prolonged, if the specimens be exposed to sun or heat or cold. The turbidity might have to do with the aesthetic side of the water. The precipitate microscopically may show what is the source of it. The color and odor also may show its origin or some source of pollution. These are simply auxiliary items aiding to interpreting what follows.

The only absolutely pure water is that properly distilled, or a great deal of that just evaporated into the air from the earth's surface. This water has nothing else in it of a chemical or a living nature, but hydrogen and oxygen chemically combined in the proportion of H_2O. It acquires from the air various gases and living organisms there contained. Rain water really practically never comes to us absolutely pure, H_2O. If there be much dust in the air, and this dust contains noxious chemicals and germs, rain water might be a very bad water, but this seldom occurs. The source of pollution of rain water is usually the earth's surface, its vegetation, or its animals.

Water, and pure water especially is a great solvent. It will even take up from glass. Hard water is our best example of this solvent property. Here carbonates and sulphates of lime and magnesia especially are taken up from the earth. But these are not the only chemicals in the earth. There are many others. Plants derive their solids, especially their inorganic ones, from this source, the water passing through the earth's surface and dissolving as it goes. The excess of this water is what gets into our rivers and lakes, and down into our artesian well sources. As a rule, the further down into the earth it has to go the more chemical material it will take up, interchanges of all kinds taking place during this transit.

The surface layers of the earth contain the greatest quantities of the organic matters. The deeper layers the inorganic.

Water that goes through the surface and then through the deeper layers has its organic dissolvings decomposed as it goes down, so that artesian well waters usually contain very little, if any, organic materials. This is not always so, though, for water sometimes gets into the deeper strata of the earth through fissures, where practically no chemical transformations take place, so that often artesian well waters how badly from the chemical standpoint. Surface waters, those that have not gone through any great thickness of earth, contain more organic matter than those "artesian" waters, and those that merely run off the surface contain the most organic matter and in the most recent stages.

The organic matter we speak of here is that derived from plants and animals, and, of course, this is found in all stages of decomposition in the process of its return to its original elements. The least decomposed is on the surface, the farthest advanced in decomposition is deepest down, and between these two points in a general way all the intermediate stages are met with.

A river water is generally a surface water, and usually contains the most organic matter. All rivers do not drain the same kind of areas, so will vary in their organic content.

Lake waters are fed from rivers, but have had time to undergo many changes, especially in the larger lakes. This water, usually thin, contains less organic material than river waters.

Ordinary well waters, it can be easily seen, will vary much in their composition in different localities and with their depths. Then, even the artesian water will vary also. These all vary then in composition, and yet we have examples of all of these, unquestionably pure waters and perfectly safe as drinking waters. Now, what standard of chemical purity could one give for all these. Many attempts have been made to find a standard. None has yet been found. Every water has its own standard, as every individual in each of his functions has more or less a standard for himself, and yet some are best and some are worst and still pass.

Bacterial Counts. From the chemical standpoint no one would think of comparing Lake Superior water with Lake Muskoka water. Yet both are potable waters. But we do not speak of Lake Superior water as first class chemically, and of Lake Muskoka's water as second class chemically. Now,

why this difference. It is this. The organic matter that is in a water unless it be from recent putrification, and in large quantity, and then it would smell or taste bad, is not what hurts us in drinking it, but it is what this organic matter will give harbor to. In absolutely pure water bacteria will not live. It becomes a physical impossibility for them to do so. A few drops of urine dropped into a litre flask of this absolutely pure water though will change all this. Bacteria will then be able to thrive and multiply in it. If more be dropped in they will thrive and multiply much the more. It is in this way that much organic matter in a water make us suspicious of it. All the bacteria in a water are not noxious, though. Organic matter is simply their food. Pathogenic or disease-producing bacteria may not be in the water at all, but when there is much organic matter, and especially if it be from animal sources, and this recently, they thrive if they should reach it. Now, when we say in the report above that this water contains 2,500 bacteria per cubic centimeter of the water it means that there is considerable organic matter in the water. Lake Superior water would probably not support more than 25 or 30 to the cubic centimeter as a habit. Now, many "river-waters" have 2,500 bacteria per c. c. as their habitual normal content. Ordinary wells not more than 400 or 500, but they vary as rivers vary. The district always has to be taken into account. The one from which this water came shows ordinarily about 500. This water then shows an increase over normal of 2,000. This is its changed condition. We may say this water contains increased food material for bacteria, and we should have our suspicions aroused by it.

There are many circumstances which might cause error to creep in here in our conclusion. Water samples should always be collected in sterile bottles and without infection during the process (off one's fingers, the glass stopper touching something, the lip of the pump-spout, the dipper, surface screen, stirring, etc., etc.). The bottles should be packed in ice to inhibit further growth—(under conditions this kills many of the bacteria). The ideal method is to make the cultures immediately on collection, and they should not be more than 12 to 15 hours in transit before culture is made. After 24 hours it is hardly worth while to make the count.

The count is made by mixing with a proper quantity of nutrient gelatine, one cubic centimeter of the water to be examined, with another one-tenth of a cubic centimeter after dilution in a sterile water, or even a one in one hundred dilution in a third quantity. The medium is then poured into "petrie-dishes" and incubated at a temperature of 20 degrees to 22 degrees C. for 48 hours. After this time the colonies which have developed from each individual bacterium in the original water are counted. The average is struck, and the result is the number of bacteria per cubic centimeter of the water under examination. This shows whether the water is a good culture medium or not, nothing more; for no differentiation of the bacteria is made as their being saprophytes or parasite. Sewage will sometimes show 35,000,000 per c. c.

Colon Bacilli. These are bacteria found in the intestines of practically all mammals. They are not normal in water. They may live a considerable time in water (weeks), but it is not their normal habitat. Nearly all waters where many people and animals are collected will show them frequently, but rarely in the small quantities we make an examination from, viz., one cubic centimeter. When found in this quantity we may infer there are many of them, or at least that they are present in harmful quantity. In many ways they belong to the same bacterial group as the typhoid, the parayphoid, the panacolon bacilli. And we are not so sure that they will under conditions that are not clearly defined as yet show pathogenic properties to the human subject. At any rate, when they are found in one c. c. we should look (in the present state of our knowledge) with suspicion on the water containing them.

They are practically always found in sewage polluted waters, and these usually contain typhoid infection. The typhoid bacillus is not looked for. The chances are it is dead by the time it reaches us. They are present in extremely small numbers, and it is difficult to get them into a sufficiently small quantity of water to isolate them from. The process is extremely long and laborious. The organism itself becomes probably much altered by its new environment, and cannot be recognized. The fact remains that it has been found, but by two or three competent observers so far in typhoid-producing natural waters. The colon bacillus lives under the same conditions, is present under the same circumstances, and when present is looked on as presumptive evidence of a prety strong kind of that such a water may at least give rise to typhoid fever. The discovery of it finds its greatest use in the estimation of the value of filter plants. A plant that will let them through will likely let typhoid bacilli through. A plant that will exclude them from its effluent can be looked on as efficient to hold back the typhoid bacilli. The experiments of the Lawrence Experimental Station have shown that a filter that will hold back 95 per cent. of the bacteria in a water supposing it to contain 1,000 bacteria to one cubic centimeter, and of these 50 are colon bacilli. Only about ten of the colon bacilli will be held back with the 940 of the other kinds, leaving 40 of the colon bacilli in the last 50 approximately, whereas one holding back 99 per cent. will hold back the 40 practically altogether. The extra 4 per cent. will remove the remaining 80 per cent. of the colon bacilli. Then, again, in examining public water supplies that are ordinarily pure, the finding of colon bacilli will put us on to possible pollution. This was well illustrated at Kingston last year, where colon bacilli gave rise to a suspicion of something being wrong with the conduit pipe. An unsuspected leak was found, stopped up, colon bacilli disappeared from the water, and typhoid fever soon disappeared from the city, that had been suffering from an outbreak for months.

Colonoid Bacilli. These are organisms belonging probably to the colon group. They have many of the cultural peculiarities of the colon bacillus, and in my experience are found in those waters only that are suspicious. No greater stress is laid on them, suspicious; but especially so if there be evidence of chemical pollution accompanying.

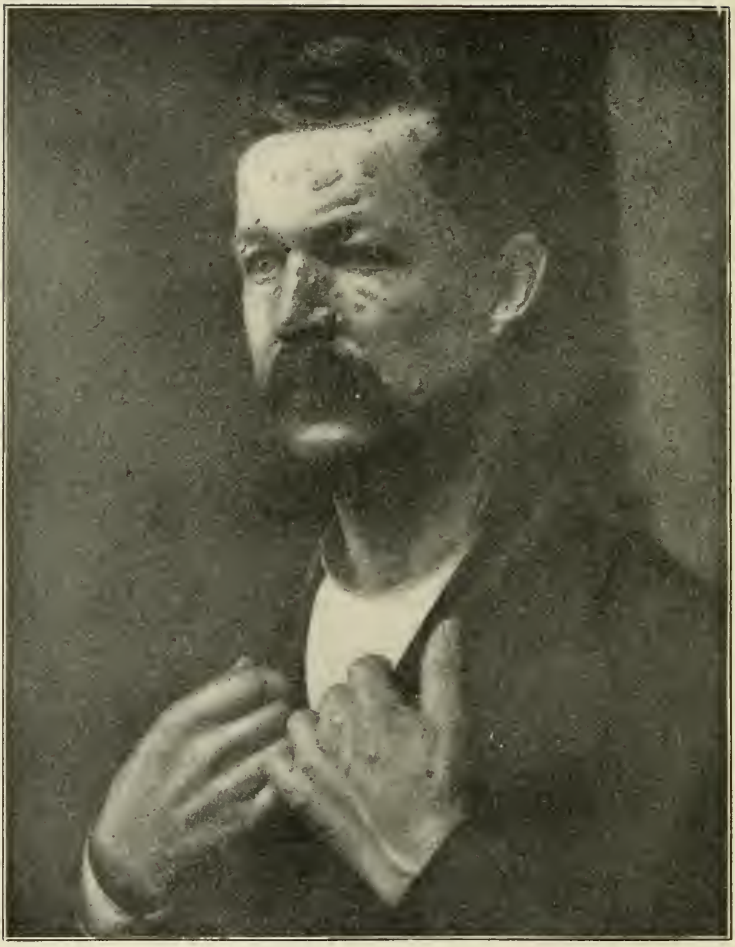
Streptococci. Houston's work in England showed that streptococci were extremely rarely, if ever, found in unpolluted waters, but always in sewage and sewage polluted waters when this pollution was recent. They are organisms found always on animals, and in their excreta. They do not live long in natural waters, and when found are evidence of recent pollution from animal sources.

Chlorine. Practically all natural waters contain chlorine in the form of sodium chloride. In the great lakes, beginning at Lake Superior and ending in the St. Lawrence River, it is from 3 to 7 parts per million. Unpolluted surface streams and ponds contain very little, usually not more than 1 or 2 parts per million. Ordinary ground-waters, such as are found in the wells of the country, contain from 6 to 9 parts per million throughout our Province, with the exception of the counties of Kent and Essex and those counties bordering on Lake Huron, where salt mines are found. The chlorine in these wells run sometimes as high as eight and ten per centum. Leaving aside salt mines, about the only source of chlorine that we meet with is that from animals (urine and kitchen washings). Now, when this is found in excess of the standard for the district, we are led to infer that it is animal in origin, and in the case of wells has reached them by soakage from the surroundings, through the agency of the dissolving water. Of course, if chlorine is found in excess, the inference that other matters from these sources are there also is

justified, and as a matter of fact is found to be a fact. Then the water containing becomes a good culture medium for bacteria. It is the water we would expect a large count in. The medium is especially for pathogenic bacteria, coming as it does from animal sources. The combination of excess of chlorine and infection by colon bacilli has in our experience very frequently been connected with waters suspected of causing typhoid fever, when in addition streptococci are found usually it has been diarrhoea at least that has been complained of.

Free Ammonia, Albuminoid Ammonia, Nitrogen as Nitrites and Nitrates. The sum total of these represents the nitrogenous matters contained in the waters. These nitrogenous substances are derived from living substances, from the protoplasm of plants and animals. They are the proteid or albuminous portion of living things. In their decomposition they are converted into ammonia. The ammonia is farther oxidized into nitrates and finally into nitrites. In the analyses for these substances, the free ammonia is first distilled off from a measured quantity of the water (500 c. c.) and estimated by Nessler's method. There is left behind now the albuminoid material that has not yet been decomposed. We decompose this artifically with alkaline permanganate of potassium into ammonia, and distill this off and estimate as for free ammonia. Now there remains the estimate of the nitrites and nitrates. We in our laboratory do these together. A measured quantity of the water is electrolized for 24 hours. This conveys both back into ammonia. This is estimated. Correction is made for the free ammonia that is present, the rest represents the nitrogen in the nitrites and nitrates. The free ammonia, albuminoid, ammonia and the nitrite and nitrate ammonia added represents very closely the total nitrogenous material of the water under examination. All waters as they run over or through the earth's strata take on a quantity of this. Lake Superior water shows .03 of free ammonia, .020 of albuminoid ammonia, nitrites and nitrates .10 parts per million. An uncontaminated river water may contain perhaps three times as much under each of these headings. The nitrogenous matter does not do the harm, it is the food material for bacteria. If they are not there, then the organic matter does of itself no harm, except that it is ripe if infection comes its way. In the water reported above the total nitrogenous material is very high, and of itself would condemn the water. Some sewages would not contain much more.

Oxygen Consumed. This represents all the oxidizable organic matters in the water, the nitrogenous that has been spoken of above, plus those that contain no nitrogen, the coloring matters of plants, tannins, starches, sugars, etc. Of course, in waters polluted from vegetable sources these substances are present in advanced quantities. In animal polluted ones they are in less quantities comparatively. Alone the results obtained by this analysis are not of very great value, but in conjunction with the ammonia results help us to determine as to whether the source of pollution is animal or vegetable. The method is to boil a measured quantity of the water with a standard solution of potassium permanganate. The permanganate represents so much oxygen consuming power. The oxygen is given by the organic material. The above report from its chemical data shows that there is a large quantity of organic matter present in this water, that the water is a good culture medium for bacteria. The bacterial count bears us out in this assumption. It is a good culture medium. Unfortunately, the rest of the bacterial data shows that the water is infected with disease-producing or suspiciously disease-producing bacteria. In our experience it is just such waters as give rise to outbreaks of typhoid fever, and this water was sent by a Medical Health Officer suspecting it to be the cause of such an outbreak.



First case of smallpox, New Liskeard. (Diagnosed as Impetigo-contagiosa).

THE SANITARY REPORTS

OF THE PROVINCIAL BOARD OF HEALTH
OF ONTARIO, CANADA.

VOL. XXIII. PARTS III. and IV.

A Study of Immunity in Variola and Vaccinia.

By C. A. HODGETTS, M.D.

The prevailing opinion amongst medical men, generally, is that one attack of variola prevents either a subsequent attack of small pox or the vaccine virus from successfully taking. As to how far this is correct, the subsequent remarks will endeavor to indicate.

For a proper understanding of the subject it must be considered from the standpoint of immunity, which may be defined as the power possessed by individuals to resist infection, and this power may be described as either natural or acquired, absolute or relative in the case of both diseases. How long natural immunity, may continue absolute in an individual cannot be stated with certainty, but instances now and again are to be found where the resistance continues throughout an epidemic of variola where the exposure is either continued or repeated. A marked example of the former was that of a child of ten years, unvaccinated, who during the outbreak which prevailed in Essex County in 1900, lived with the other members of the family, nine in number, all of whom suffered from the disease, and yet the little one remained an immune. In this family several cases were markedly discrete and one was semi-confluent and the members of the household mingled freely, the little girl eating and sleeping with the others during a period of some eleven weeks. She was, apparently, a case of natural immunity, for the girl had never acquired such by vaccination or an attack of variola at some previous date. I had not the opportunity of ascertaining the resistance she possessed to vaccine because the family would not permit of the operation being performed.

That natural immunity may be relative and not remain absolutely permanent throughout life may be supposed, although instances have not been recorded so far as I am aware, in regard to smallpox. The resistance to variolous infection may be changed or lessened by both instrinsic and extrinsic causes, as for instance by physical debility on the one hand or increased virulence of the disease on the other. That it is relative in one who has for years resisted the inoculation of the virus of vaccine there are however examples, and from this fact it is safe to reason that it is so in regard to those who have proved immune to one attack of smallpox. I have during the past few years witnessed the successful vaccination of some who for many years have resisted repeated attempts to vaccinate, the successful vaccination producing the typical reaction of that disease; for I do not refer to that virus referred to by Dr. Welch in the following words—"There is, however, considerable virus in use which is sure to cause a sore arm even in immune persons." It must be remembered that the repeated failures may have

been due to some fault either in the performing of the operation or in the efficacy of the virus itself, and it may be argued that the results witnessed were due to the operation, first time being accompanied with the introduction of "good virus." But the claim that these cases are examples of relative immunity is enhanced by the fact that on the occasions when the vaccination had been previously performed with negative results, others had been successfully vaccinated by the same vaccine either human or bovine.

To most persons, the immunity possessed against variola is acquired either (*a*) through an attack of the disease, (*b*) by inoculation, or (*c*) successful vaccination,, and for some few the immunity thus derived may be considered as absolute, while to the majority, however, it is but relative, although [1] "formerly protection by all these ways was considered complete and permanent."

As early as the year 1829, the practice of re-vaccinating the troops was commenced in Wurtemburg, and the collective results recorded for a period of five years, 1831-35, during which time 13,781 men, chiefly of the group age 20-30 years, were re-vaccinated. Of this number, 266 bore marks of previous smallpox, and the results of the vaccination in this group, as regards re-action, were perfect in 31.05, modified in 24.81, and none in 42.23 per 100.

Later,[2] in 1839, Dr. Theile observed in the vaccination of the Russian soldiers at Kasan, there happened to be vaccinated 1,436 persons presenting marks of previous smallpox, and that perfect vesicles would arise just as often in these persons as in those who had once been vaccinated. The summary of his report is as follows:—

Presenting marks of variola	1,436.	Perfect success	18.87 p.c.
" " " vaccination	247.	" "	18. 6 p.c.

Of the more recent writers on the subject, [3] Mr. Marson's observations further established the fact that the degree of modifying power for immunity is in the eacxt ratio to the excellence and completeness of the vaccination, as shown by the cicatrices. His observations continued over thirty years and extended to 15,000 cases, and the following extract is given in the table:—

Vaccinated.	Mortality rate per cent.
a. Having one vaccine cicatrix	6.80
b. " two vaccine cicatrices	4.70
c. " three vaccine cicatrices	1.95
d. " four or more cicatrices	0.55
e. " well marked cicatrices	2.52
f. " badly marked cicatrices	8.82
g. " no cicatrix	23.57
Having previously had smallpox	19.50
While the death rate in the unvaccinated was	35.00

A study of these interesting figures emphasizes the fact that while the general mortality from the disease amongst the unvaccinated was 35 per cent., and amongst those who previously had the disease 19 per cent., as compared to 23.57 per cent. in those unsuccessfully vaccinated, yet the immunity imparted by vaccination was relative as shown in the groups "*a*, *b*, *c*, and *d*," as also in groups "*f*" and "*g*" and possibly some immunity might be claimed for those who had been vaccinated, though there existed no evidence of it. Two facts are however established; first, that the immunity imparted by an attack of variola is relative and not always absolute; second, that there are varying degrees of relative immunity of the vaccine virus, though whether the number of marks or cicatrices are the only factor to be counted on rather than the amount of virus used as evidenced by the area of

these cicatrices and the period elapsing between the vaccination and the attack of the disease is not plain.

Sternberg, [4] in 1895, stated, "The fact that a single attack of smallpox is not always protective, would lead us to expect that the immunity from vaccination would not be absolute, and experience shows that in every smallpox epidemic a certain number of persons who have been vaccinated fall victims to the disease."

This clearly indicates that he is of the opinion that the immunity in each case is only relative.

In 1871, Mr. Robert Bath, [5] Staff Assistant Surgeon, in Medical Charge of the Depot of Foot Guards, pointed out the fact that the British Army Medical Authorities recognized that the immunity imparted by one attack of smallpox is not absolute for all recruits even if plainly marked with the disease were subject to vaccination. He says: "I find, therefore, that of these twenty-nine out of 797 recruits in 1870, in eight instances a perfect vesicle resulted from vaccination; seven were returned as modified; and fourteen, or less than half, as failures. These results," he says, "may, to some, appear surprising; they seem, however, to indicate that the immunity conferred by an attack of the disease is not absolute, but relative." The editor of the *Lancet*, in the same number, in commenting upon the subject, says in part as follows: "By an extraordinary omission in the circulars of the Privy Council and College of Physicians, no recommendation is given for the vaccination of persons who have had smallpox. Several cases have come within our knowledge in which very fine vesicles have been produced in persons who have had smallpox; and it is well known that it is not infrequently fatal in the second attack; indeed, a case was mentioned only last week in our report on vaccination, and another has since been reported to us. Experience shows us that vaccination and re-vaccination together confer even greater safety than an attack of smallpox, and it therefore follows that vaccination should be strongly recommended under such circumstances."

As further pointing to the relative immunity imparted by variola and vaccinia, the three following interesting cases are submitted—the first two by the well known medical authorities Allbutt[6] and Brouardel, and the third being a letter received by the writer from Dr. Round, of Plymouth, England.

The first is as follows:—

1858. A. B. born ———. Mother developed smallpox when infant was three months old, and child had it in a mild form.

1858. When three months old successfully vaccinated, 3 scars.

1881. Successfully vaccinated, 2 scars.

1883. Mild attack of smallpox.

1892. September, successfully vaccinated, two scars. November, unsuccessfully vaccinated.

1893. Unsuccessfully vaccinated.

1896. Very mild attack of smallpox, but indubitable.

The second is recorded by Brouardel[7]. "The immunity conferred by variola against a second attack is also subject to the same variations. In 1868 I saw a lady at Passy who was suffering from confluent variola, being then 32 years of age; in 1871, after the seige of Paris, she had an attack of discrete variola; in 1873, having occasion to vaccinate her niece, I performed the operation on her and was surprised to find that it took perfectly. Thereafter I vaccinated this lady six times at intervals of six months in the presence of Dr. Lorain, and each time vaccinal eruption appeared with absolute regularity. In 1876 the lady left Paris and I have not seen her since."

The third is the letter which reads as follows:—

57 Ebrington St., Plymouth, Sept. 17, '03.

Dear Sir,—

It may perhaps interest you to hear of my own case.

In 1893 I was vaccinated in the April, whilst in the December of the same year I had an attack of discrete variola.

In 1897 I accidentally pricked my hand with a charged vaccine lancet with the result that I was again successfully vaccinated on the back of my right hand.

In 1903, I had a rather strange experience. I felt ill one day, but went on with my work. Three days later I felt a few spots on my back and had a few elsewhere. At first I thought they were boils coming, so I went on with my work; but I felt so bad that on my way home from a confinement, I called at the house of a medical friend who told me that I had variola. I stopped work at once and wondered what would happen to the confinement patient; however, she did well and never knew that her doctor had attended her while suffering from smallpox.

I wonder if any other man has ever attended a confinement whilst suffering from variola and without the patient taking any harm.

Yours very truly,

(Signed) JNO. ROUND.

In addition to the foregoing, the history of three cases which have occurred during the past two years in the Province are reported:—

1st. Mrs. "V.," unvaccinated, Dec. 9th, 1901, was attacked with smallpox, discrete in character. Dec. 11th, 1902, was vaccinated in two places with vaccine from different sources. Both took and on Jan. 2nd., one scab was still adherent. That the case was smallpox there can be no doubt, as six other cases were directly traceable to having been infected by Mrs. "V."

2nd. Being called in consultation to "B." in 1902, to see a child ill with varioloid, it was found that the nurse, Miss R., unvaccinated, presented evidence of being in the third week of variola, some of the scabs being in evidence. She was, together with the child, forthwith moved to the isolation hospital. Instead of being cleaned up and discharged, she was detained in the hospital and assisted to nurse the other female patients, one of whom was a semi-confluent case. Within three weeks after admission she was, for the second time, attacked with the disease, varioloid on this occasion. The aborting of the eruption at the various stages was marked, and the patient left the hospital within two week from the onset of the second attack, presenting the characteristic marks of both attacks.

3rd. During the epidemic in Ottawa, in 1903, a young woman, unvaccinated, was admitted suffering from a discrete attack of the disease. After recovering, some five weeks later, she was engaged as an assistant in the wards; and, six weeks after beginning the duties, she was stricken with the second attack, discrete in character, and typical in every respect. I saw her previous to her recovery from this attack and there were present at that time distinct evidences of the first attack.

The two cases of smallpox with second attacks at short intervals are examples of relative immunity and would indicate that the mild form of the disease, which has been so prevalent in the province for the past few years, possesses but slight powers of immunity when the person is brought in contact with the variola in its more virulent form; and this fact is further shown in the case where the woman was vaccinated successfully within twelve months of her attack of smallpox, for here the immunity, which one would

look for in one who had suffered from "variola discreta," was not to be found present within the year.

In further considering the question, it becomes evident that the relative degree of immunity imparted by smallpox in the past has been that resulting from the disease in a type infinitely more severe than that which affected the three above cases just referred to. In the case of those reported by Dr. Marson, the mortality amongst the unvaccinated was 35 per cent. and the lowest was 0.55 per cent. which is about equal to that which has occurred in the epidemic that has recently visited us. How then can one speak as to the immunity which exists amongst the tens of thousands who have suffered from this extremely mild variola? It is, I fear, in many instances inferior to a successful vaccination, and the permitting of so many to remain unvaccinated after passing through an attack of mild variola, is to permit them and the general public to live in a fool's paradise.

Bibliography:—
1. McVail. Shenson & Murphy. Treatise on Hygiene. Vol. II.
2. See H. Simons Reports.
3. Reference Handbook of the Medical Sciences. Vol. VII., p. 529.
4. Immity and Serumtherapy. Sternberg. p. 230.
5. The Lancet. Feb. 11th, 1871.
6. Allbuts System Medicine. Vol. II.
7. Twentieth Century. Practice of Medicine. Vol. XIII.

Third Quarterly Report of Secretary, (1904.)

To the Chairman and Members of the Provincial Board of Health:—

GENTLEMEN:—For the quarter ending June 30th, 1904, I beg to report as follows:

During the three months it is most gratifying to note there has been a marked decrease in the number of cases of contagious diseases generally—the exceptions are however, measles and tuberculosis—as shown by the following table:

(See Appendix A.)

The decrease in scarlet fever from 983 to 408 cases, is in no small measure due to the manner in which the Regulations adopted by this Board in 1903 have been adopted and enforced by the Local Boards of Health throughout the Province. The good result is an evidence of what may occur from an honest endeavor on the part of health authorities generally to enforce sanitary regulations. In contrast to this I would point out that this Province has been put to unnecessary expense and will be for some years to come, simply from the neglect on the part of Municipal authorities to enforce the provisions of the several statutes as they now stand, looking to the vaccination of all children at the school age. In the few municipalities where this Act regarding vaccination is enforced and children on arriving at the school age are required to present certificates of vaccination before being permitted to embark upon their studies: the results have been most satisfactory—cases of

smallpox have been comparatively rare amongst the residents, and expenses on account of this particular disease have been small. The expenditure in all these has been due chiefly to imported cases happenings in unvaccinated persons.

The chief deliquents in this regard are the rural municipalities—they have as a rule disregarded the Vaccination Act, and as a result there has grown up therein a population unprotected—a population ignorant of the law, but none the less law-breakers—and it is on account of the large percentage of the inhabitants of these townships being such, that the health authorities have to incur heavy expenses in the suppression of outbreaks of Smallpox. The tax-payer being in the main responsible for his own liability from the fact that he neglects, nay often encourages individuals to transgress the law.

The unfortunate thing about the situation is that the municipality which honestly endeavors to carry out the provisions of the Act and Regulations in regard to vaccination of its inhabitants, is the one which has most frequently to pay the bills of those municipalities which are the law-breakers, and it would not be unwise to make each municipality responsible for the treatment of smallpox patients in another municipality when it can be shown that the patient has been unvaccinated and was a resident for at least one year of the same.

Of the group of notifiable diseases, Diphtheria maintains a somewhat normal standard, both as to case incidents and mortality—notwithstanding the greater extension of the use of anti-toxin both as a prophylactic and a curative agent—and the ready adoption by parents of what we are pleased to class as preventative measures, and such as are generally adopted by health authorities.

As an evidence in support of the Scarlet Fever Regulations which place the minimum period of quarantine at seven weeks, the "Observations on an Epidemic of Scarlatina," by Bertram Thornton, M.O.H., Margate, England, published in the British Medical Journal, June 18th ultimo, is most interesting. The epidemic occurred in a boarding school of 300 children, and there were in all 96 cases—including 3 who had distinct second attacks. He classifies them as follows:—

Class I. (*31 cases.*)—Typical cases, with rash, sore throat, and elevation of temperature, usually not more than one or two degrees.

Class II. (*19 cases.*)—Children who had no observable rash but only slight redness of tonsils, and from one to two degrees of fever, with characteristic peeling beginning during the second or third weeks. These were all isolated on suspicion.

Class III. (*46 cases.*)—Children who simply peeled, and although specially examined daily, showed no signs of the slightest indisposition.

And remarks upon them as follows:—

"With reference to the cases under Class I., I may add that they were all fairly typical, though most of them were not at any time really ill. Nearly all of these were sent to the District Fever Hospital and mixed with scarlatina cases from other sources, as well as a large proportion of cases from Classes II. and III.; none of them contracted a fresh attack after admission, except the cases mentioned above. This fact may be taken to prove that all the cases were bona-fide cases of scarlatina. My diagnosis was also in all cases confirmed by Dr. Lorimer Sawers, the acting medical officer to the Fever Hospital."

Class II. "One remarkable feature of the epidemic was the unusual length of time occupied by the process of desquamation. It will be seen from

the subjoined table that the mildness or absence of symptoms was not necessarily followed by a shorter period of peeling, but if anything the process of desquamation was prolonged in the cases which showed no initial symptoms of illness."

"For precautionary purposes, I considered cases were unfit to return to school in which there was any appearance of ragged skin on the sole of the foot as technical "peeling", and therefore infectious, after eight or nine weeks from the beginning of the disease. Doubtless, infection had ceased in many instances before I felt justified in permitting them to return to school."

"It is not improbable that some of the cases of prolonged peeling were due to reinfection without general symptoms."

"In a few instances the children discharged from the District Fever Hospital with desquamation apparently quite accomplished, started peeling again a few days after admission to the convalescent house to which I sent all children previous to allowing them to return to school."

Table of cases. Margate Boarding School—showing the weeks of detention of patients.

	Weeks.																	
	5	6	7	8	9	10	11	12	13	14	16	17	18	19	22	23	24	26
Class I, cases	....	1	....	7	7	2	1	....	1	1	3	1	4	....	...	1	1	1
Class II, cases	....	6	3	3	2	1	1	....	....	2	....	1	....	....	....	....	....	....
Class III, cases	3	4	4	2	10	2	2	1	2	2	9	....	3	1	1	....	....	....

Portions of weeks omitted.

Regarding the period of infectivity he speaks as follows, in concluding a most interesting and instructive paper:—

"In conclusion, I would suggest that from a financial point of view, it is most desirable that an attempt should be made to come to some definite conclusion as to the duration of the period of infectivity in scarlatina."

"Dr. Klein and Dr. Mervyn Gordon have been making investigations on the bacteriology of scarlatina, and have, I believe, come to the conclusion that the micrococcus scarlatinae is the active agent in this disease, that it can easily be found in the throat secretions, and is rarely to be found in the nose, in the ear discharges or in the cuticle. If these observations are correct, the time is approaching when it may be possible to materially limit the detention of scarlatinal cases in quarantine, and the present rule-of-thumb method of detaining patients until desquamation and ear discharges have ceased may be superseded by the more precise and scientific proceeding which now obtains in diphtheria. The saving in time and money to the community if it is possible to shorten the time isolation and limit the number of return cases, will be enormous."

Health authorities might also take into consideration the possibility of economizing public funds by providing, on the sites of fever hospitals, an annex for convalescent desquamating patients, which need not be constructed on such expensive lines as is necessary for the treatment of the disease in its acuter stages."

As communications are constantly received at the office regarding the "only very mild cases" in which many physicians consider quarantine should be raised at an earlier date than the end of the seventh week, the above facts should be borne in mind.

During the quarter ending June 30th there have been reported 83 cases of smallpox. While acting in the capacity of Inspector, it was my

duty repeatedly to complain of the errors in diagnosis which were then met with, and the hope was expressed that the profession generally would profit by these mistakes which had in several instances resulted in marked financial loss to some of the municipalities. Recent developments of the disease in portions of the province remote from each other, have revealed the fact that for some weeks, and in one instance for some months, cases of smallpox have occurred, which when seen by local practitioners, have been diagnosed, as impetigo—this "medical fad" has no doubt been adopted from the fact that the public are suspicious, nay skeptical, when an opinion is expressed that the disease is chickenpox—while impetigo is an almost unknown term with the laity, and their suspicions are not aroused by its use. The most glaring instance of this happened in the Temiskaming District where some of the medical men maintained, and one at least continues to maintain, that the disease is impetigo contagiosa. As the matter is discussed in Dr. Amyot's report, I will not further refer to it here.

During the quarter smallpox has happened in three localities in the unorganized portions of the province, viz., Township of Chisholm, Wahnapitae, and in the Temiskaming District.

In Chisholm the first case was of the Haemorrhagic type, and died on the second or third day of the illness, owing to the fact that a dance was held in the house while the patient lay ill, and many persons were innocently exposed—Dr. Porter, of Powassen, fortunately took prompt action upon diagnosing the disease, and notified the office, and Dr. Livingstone was sent to vaccinate and quarantine all exposed—with the result that no further cases occurred. Dr. Livingstone's report it attached.

Early in June cases of smallpox were reported at Wahnapitae, Sudbury and Sault Ste. Marie, and a camp in the vicinity of the former village. As there was some uncertainty as to the origin of the cases, I made a personal visit to the district and arranged for the maintenance of proper quarantine—from the information collected, I was of the opinion that the disease was prevalent in the Temiskaming District, for there was direct evidence of the first cases having come therefrom. As it was inexpedient to prolong my absence by a personal investigation, I returned to the city, where upon my arrival letters and telegrams were awaiting me, which confirmed these suspicions. In view of the fact that the local physicians differed in their opinions regarding the disease, I felt it was necessary to send as representative of the Board, some one whose opinion would be of weight and Dr. Amyot very kindly consented to make the trip—the opposition which he met at the hands of both the M.H.O. of New Liskeard and the inhabitants, proved the wisdom of entrusting this mission to the doctor. His report, which is appended, speaks for itself.

At present Dr. Marshall and two assistants Drs. Wilson and Watts are working in the district to the north-east and north-west of New Liskeard, and an inspection of all travellers leaving the district is being maintained. The assistance in this latter work which we are receiving from the Lumsden Navigation Company, is invaluable. Dr. Marshall reports that vaccination is progressing rapidly, and the larger number of inhabitants together with the Local Authorities at New Liskeard and Haileybury, are now actively cooperating. He reports, however, opposition on the part at least of one medical man who adheres to his original opinion, that the disease is Impetigo—and to which error continued over several months, is to be ascribed the present outbreak, together with the fact that the Local Board of Health of Haileybury failed to communicate the following resolution passed by the Board, April 30th last, until June 13th.

Resolution.

Haileybury, 10th June, 1904.

Copy of resolution passed by the Local Board of Health, Township District of Nipissing.

30th April, 1904.

Moved by S. D. Briden, seconded by William Craig:—

That Mr. McQuarrie be authorized to inform those who have complained of the existence of a contagious disease in our midst, that the matter will be taken into consideration, and representations made to the authorities in Toronto, but as we have no evidence to show that the disease is malignant, and the doctors, even, are not unanimous in their diagnosis, we cannot do more than advise precautionary measures, pending the receipt of opinion from Toronto, though our medical health officer has pronounced the disease to be 'Impetiago Contagiosis,' which he pronounces to be not dangerous.

The above motion has been indorsed by Dr. McLaren, Medical Health Officer, on June 1st, 1904.

C. C. Farr,
Chairman of Board of Health,
Haileybury.

The reason for this neglect, which is almost criminal in character, is difficult to understand. Many innocent persons have thereby contracted a disease from which otherwise they would not have suffered; and remote municipalities have incurred expense which is directly chargeable to this regrettable negligence.

On May 28th last, when in Kingston, a telegram was received from the C.P.R. authorities, regarding a car-load of first-class passengers from the Pacific, who had been exposed to smallpox, instructions were forthwith sent to detain the passengers at the first convenient point, and on the morning of May 30th I examined the passengers at Yellick Siding, five miles west of North Bay, where every arrangement was made for their medical care and quarantine, until June 9th, upon which date no illness having occurred, they proceeded to their destination.

As it was quite evident these passengers had been exposed to smallpox while on the S. S. Athenian, before her arrival at Dominion quarantine at Peterhead,—and through an error on the part of one of the quarantine officers they had been permitted to land and allowed to travel some four days across the continent without any action being taken by the Dominion Authorities to detain them while en route, although they were constantly under the medical surveillance of the Railway Company's medical men—I deemed it my duty to at once make a claim upon the Dominion authorities for any costs this Board might incur in the maintenance of a quarantine which was forced upon us by the indifference or inertia of Dominion officials. The correspondence with Dr. Montizambert, Director-General of Public Health is herewith submitted for your consideration and action, the principle involved is one which should certainly be settled as between this Provincial Board and the Federal authorities.

During the quarter several plans of proposed sewerage systems and water supplies have been received, all of which have been referred to the respective committees.

It is found that municipal authorities frequently submit to rate-payers, by-laws which have for their object the construction of either sewerage or water systems, without first submitting the same to this Board for its ap-

proval and sanction, and I fear this method of procedure is growing, and it should be at once condemned—for it is obvious that in the case of the water supply, the first essentials from a sanitary standpoint are, that the quality is assured, and that the possibilities of pollution are safeguarded—while in regard to the sewerage system, the disposal of the sewage is the important factor, not first which streets shall the system be constructed on. The sanitary considerations are first and the engineering difficulties of secondary importance.

While in London in the month of May, I had occasion to visit in the neighborhood of the Contact Beds of that city, and found that they were not in use—indeed a large portion of the coke had been removed for fuel some time before and had not been replaced—in the meantime the sewage of the city was, and has been for months poured into the River Thames untreated—the attention of the Local authorities was directed to the fact that the conditions imposed by this Board at the inception of the work were not being fulfilled. This occurrance has impressed me with the fact that the Inspector of this Board should periodically visit each municipality having either a sewerage or water system, and report to this Board the conditions found at the date of the inspection. In this manner the Board would be kept informed as to the maintenance of the several systems by the Local authorities, and the annual extension of the same. Coupled with this there should be a laboratory examination of the water supply, then some idea could be formed both of the quality of the water and the character of the sewage of our cities and towns.

At the last meeting of the Board I had the pleasure of directing attention to the necessity for some change in the publication of the Monthly Bulletin, the Annual Report and the Report of the Executive Health Officers' Association—the subject was referred to the Committee on Publication, but on reference to the minutes it could not be found that such a committee had been appointed, so on referring the matter to the chairman it was decided to defer action until this meeting. In the meantime, however, the accompanying memorandum was submitted to the Hon. Mr. Stratton, and approved of by him.

In the month of June I attended the 19th Annual Meeting of the Conference of State and Provincial Boards of Health of North America, at Washington, D.C. The attendance was large, nearly every state of the Union being represented by its secretary who is required by law to attend annually a conference with the Sugeon-General of the Marine Hospital Service at the Capital, and on this occasion the two conferences were held concurrently.

The questions which chiefly engaged the time of the conference were:—

(*a*) The desirability for the preparing and distributing to physicians a leaflet dealing with the personal precautions to be taken by patients suffering from venereal diseases.

(*b*) The necessity for securing legislation, looking to the examination of eyes and ears of school children.

(*c*) The consideration of the following resolution:—"Whereas, it has been established that the diseases of malaria and yellow fever are transmissable by mosquitoes of certain species, therefore,

"Be it Resolved, that it is the duty of State Boards of Health to obtain such legislation and appropriations as may be necessary to secure drainage of swamp lands and to treat the surface of shallow ponds and pools with such substances as are recognized as being destructive to the life of mosquitoes of all species.

The importance of some system for the disinfection of Pullman coaches was introduced by the Secretary of the Colorado State Board of Health, who briefly outlined the method adopted in that State. The question was referred to a committee to report at the next meeting.

On motion of the Secretary of the Michigan State Board, a committee was appointed to report on the desirability of resorting only to vaccination as a means for the prevention of smallpox, and discarding quarantine, on the ground of its irksomeness to individuals, and expensiveness to municipalities.

An opportunity was offered to visit the new laboratory of the Marine Hospital Service and learn something of the work being carried on there. Among other matters was noticed that of the examination of products of the many vaccine establishments of the Union, with a view to ascertain the quality of the product, upon which a license is issued by the Government. Work upon similar lines is most desirable in this Province, to prevent manufacturers dumping on the Canadian public "scrap" that might be unsuitable for sale in the States. Already I am pleased to say Dr. Amyot has begun work along these lines.

Respectfully submitted,

CHAS. A. HODGETTS,
Secretary.

Appendix "A"

Quarterly Return of Contagious Diseases.

—	1903.	1904.
Small-pox	218	83
Scarlet Fever	983	408
Diphtheria	599	582
*Measles	79	243
Whooping Cough	101	69
Typhoid	144	109
*Consumption	602	618

Laboratory Report:

For the Quarter Ending June 30th, 1904.

By J. A. AMYOT, B.M.

To the Members of the Provincial Board of Health:

SIRS,—I have the honor to present you the following report of the work done in the quarter ending June 30th, 1904, in the Laboratory of the Provincial Board of Health:

Summary of specimens examined.

Month.	Municipalities.	Diphtheretic swabs.				Tubercu-lous sputa.		Typhoid bloods.		Miscellaneous specimens.	Waters.		Total number for month.
		Release.		Diagnosis.							Chemical.	Bacterial.	
		+	—	+	—	+	—	+	—				
April	122	17	16	12	28	24	95	20	21	34	2	75	344
May	120	12	32	41	48	47	99	32	76	29	1	64	517
June	119	25	40	35	46	39	100	13	67	23	1	73	462
		54	88	88	158	110	294	65	164	86	4	212	1,323
		142		246									
		388				404		229		86	4	212	1,323

There follows with the names of the municipalities from which the specimens came a detailed table of the general characters of the specimens.

The summary for this quarter shows a marked increase each month over those of the previous year of the various specimens examined.

Fifteen municipalities during the quarter used the Laboratory to release from quarantine in diphtheria, Kinmount, Kingston and Toronto Junction most frequently. It is a wonder that it is not more often used by municipalities since the new regulations for the control of diphtheria make this a means to release in diphtheria at an earlier date than the fixed one of the regulations. Nearly 50 per cent. of diphtheria cases show absence of the organisms before this date, some as early as the tenth day from onset. These could be released if the laboratory were made use of and it is here to do just such work and do it gratis.

Twenty-five used it for diagnosis in this disease. Tuberculosis examinations are more evenly distributed. For typhoid diagnosis the greater number of the specimens examined were from Toronto and Mimico. The data-cards in connection with these specimens are being more carefully and more generally filled in and sent. These will form a basis to some statistical work in these diseases that may prove of value.

The daily examinations of Toronto City water begun in March has been continued. The results show a remarkable freedom from pathogenic bacteria —Colon bacilli being found only once and streptococci once since April 15th and once before that date in April. This work is being continued. We hope to give at the next quarterly meeting a detailed account of our results in this respect. So far we have data to show reasons for the great divergence of opinion as to the purity of these lake sources. Weeks pass without any infection then two or three days with infection, but these are enough to keep up the out-breaks of typhoid so generally observed along the lake cities and towns pouring their sewage into the lake and then drinking the water unfiltered. These dates of infected water vary with the winds and then the currents generated by these winds.

The investigations in reference to canned and preserved fruits and vegetables have been continued and in addition extensive work in the examination of patent and proprietory medicines and "food-drugs." The results of these examinations will be embodied in Dr. Nasmith's paper to be read before the Association at this coming meeting.

The results of these investigations have justified the time spent. In general preservatives are not used extensively by any of our Ontario canners. The cheap jams are all filled (apple or turnip). Poisonous metals are not present in dangerous quantities.

Work has been begun in the investigation of the values of certain Formaline disinfectors or generators on the market, also Sulphurous acid apparatus. Also work has just been begun in the bacterial examination of the vaccines in general use here in Ontario on account of the possibility of these being dumped on us now that the United States Government has made certain laws regarding standard of purity in these preparations.

Also during the quarter at the request of the Mayor of Stratford a visit was made to that city to inspect their sewage-disposal plant. A report of the findings is appended. An examination of the water source of the same place was made at the same time. During the quarter also a visit of inspection was made to New Ontario over a reported outbreak of smallpox there. The report of this is also appended. Instruction in laboratory methods have been given to three medical health officers, the instruction extending from two weeks to three months.

The series of experiments to determine the values of the ordinary disinfectants used in surgery to sterilize cutting instruments were continued and are still being continued.

Report from Laboratory of Provincial Board of Health

For Quarter Ending June 30th, 1904.

County.	No. of municipalities in each sending specimens.	Diphtheretic swabs.				Tubercu-losis sputa.		Typhoid bloods.		Miscellaneous specimens.	Waters.		Total number for quarter.
		Release.		Diagnosis.							Chemical.	Bacterial.	
		+	—	+	—	+	—	+	—				
Algoma	4				2	2	2	1	5	1			13
Brant	1					1	1		1				3
Bruce	11				2	4	10			1	1		18
Carleton	1						2						2
Dufferin													
Elgin	1				1								1
Essex	6					3	8	2		2			15
Frontenac	2	6	18	21	53	6	19	7	4	4		5	143
Grey	9					5	15						20
Haldimand	5				1	2	5						8
Halton	3					1	3					2	6
Hastings	8		1			8	24	1	4	3		2	43
Huron	4				1		7	1	1				10
Kent	5			1	3	6	11	2					23
Lambton	7	2	1	5	4	4	5		3	1			25
Lanark	3	2	4	3	1	2	4		1				17
Leeds and Grenville	4			1	3	1	5		1		1	1	13
Lennox and Addington	9	1		5	2	4	7	1	4				24
Lincoln	3			1		2	4	1	4	4	1	11	28
Muskoka	2		1	1		3	3						8
Middlesex	6				1		4				1		6
Nipissing	3				1	1	4			1			7
Norfolk	3			1		1	5		2				9
Northumberland and Durham	5	3	7	5	3	2	4	3	1	1		3	32
Ontario	12				2	7	15		2	1		1	28
Oxford	8			1		4	14	2	5	6			32
Parry Sound	5			1	2	1	1	2	1	1		4	16
Peel	4	2		1	4		3						10
Perth	2				1					3			4
Peterborough	3	4	2	4	4	4	3	2	4	1			28
Prescott and Russell	1						1						1
Prince Edward													
Rainy River													
Renfrew	6		2	1	1	7	15	1	3				30
Simcoe	15	3	1	5	5	3	28	6	6			15	72
Stormont, Dundas & Glengarry	1					2	1						3
Thunder Bay													
Victoria	5	24	30	10	27	1							92
Waterloo	6	1	1	1		5	12		4	1			25
Welland	6			1	2	2	6	1	1				13
Wellington	10	2	2	4	4	8	8	1	2	2			33
Wentworth	5				1	1	4	2	5	7		3	23
York	14	4	18	15	27	7	28	31	94	46		161	431
Totals		54	88	88	158	110	291	37	161	86	4	208	1,315

Summary of Results Obtained in Food Investigations

To June 30th, 1904.

By G. G. NASMITH, M.A., Ph.D.

An examination of the various canned vegetables, fruits, and jams put up in Ontario was begun in this laboratory for the purpose of finding out whether, as is often stated ,poisonous metals are present, whether adulterants or preservatives are used in their preparation, and whether there is any reason at all for the somewhat prevalent opinion that the continued use of canned goods is injurious to the health.

Specimen.	Appearance.	Copper.	Arsenic.	Zinc.	Lead.	Tin.	Mercury.	Preservatives; Salicylic acid, Benzoates, Borates, Saccharine.	Adulterants.	Sugars.	Remarks.
Peas, 1. Early June.	Peas whole and of good color; can tarnished around part exposed to sedimented part of peas.	.....	..	traces	..	..	..	.....	.....	Dextrose ..	Claim on label "First class;" contents sweet and taste well.
Peas, 2. Champion of England.	Peas medium sized, color good; can tarnished by contact of finer particles.	. .....	..	traces	..	..	..	.....	.....	Dextrose, cane sugar.	Contents sweet and taste O.K.
Peas, 3. Extra sifted.	Peas uniform and of medium size; slight discoloration round solder only.	.....	..	.....	..	..	..	.....	.....	Dextrose ..	Contents sweet; taste O.K.
Peas, 4. Early June.	Peas large and color brownish; can discolored slightly around bottom.	trace	..	.....	..	..	..	.....	.....	None	Contents sweet.
Peas, 5. Extra faultless; June sifted.	Peas medium sized; no discoloration except around solder.	.....	..	he'vy traces	..	..	..	.....	.....	Dextrose ..	Contents sweet and taste well.
Peas, 6. Sweet sifted.	Peas very large and old color yellowish; peas suspended in starch paste; general appearance poor.	.....	.	trace	..	..	..	.....	Starch	None	Contents sweet; flavor very poor.
Peas, 7. Sifted sweet.	Peas large and old; fluid milky; can not discolored.	.....	..	.....	..	..	..	.....	Starch.....	None	Contents sweet; flavor poor.
Peas, 8 Petits pois.	Peas very uniform in size and of pleasing appearance; can slightly discolored.	.....	..	.....	..	..	..	.....	.....	Cane sugar, dextrose, salt.	Contents very sweet and of fine flavor.
Peas, 9. Very tender sugar peas.	Peas extremely large; can not discolored.	.....	..	.....	..	..	..	.....	.....	Cane sugar.	Peas extremely large and sprouted; flavor good and sweet; took much fewer peas to can on account of enormous size caused by sprouting.

The peas examined were different brands representing four different manufacturers. Traces of copper were found in only one specimen, while four showed traces of zinc; none of the other poisonous metals were found to be present. Discoloration of the can was always greater around the solder. The presence of copper, which formerly, when peas were boiled up in large coppers was almost invariably present, was rather expected but found only once.

No adulterants were found, but starch was used in two cases to thicken the menstruum; what the idea was could not be determined, as the pasty mess was not at all inviting to the eye, and certainly did not improve the flavor.

Three specimens contained cane sugar, five contained dextrose and one common salt; the cane sugar and salt materially improve the flavor of peas.

No swollen (fermenting) cans were obtained and seem comparatively rare. One ingenious canner had evidently first sprouted his peas; they were very sweet and tender, but it required only about three quarters the usual number of peas to fill a can.

The results of these analyses would not indicate that canned peas are unwholesome or in any way detrimental to health.

Specimen.	Appearance.	Copper.	Arsenic.	Zinc.	Lead.	Tin.	Mercury.	Preservatives.	Adulterants.	Sugars.	Remarks.
Tomatoes 1.	Contents sound and look well; Interior of can very bright. Color, very bright red.	traces.	.....	traces.	....	....	....	.....	.....	Salt, 1.5%	Label, "packed without addition of sugar or salt." As a matter of fact contained more salt than any of the others.
Tomatoes 2.	Contents sound; look well; color bright red; can slightly corroded.	traces.	.....	.....	....	....	....	.....	.....	Salt, 7 %	Contents acid but taste well.
Tomatoes 3.	Contents sound; can badly corroded on bottom; color more yellowish.	traces.	.....	traces.	....	....	....	.....	.....	Salt, 5%	1 litre filtered juice required exactly 1.748 grams dry N.A.O.H. to neutralize it. Taste well.
Tomatoes 4.	Contents sound; can corroded on bottom.	traces.	.....	traces.	....	....	....	... .	.....	Salt, 1.2%	Contents acid. Taste O.K.

These four specimens of tomatoes from four canneries were all sound and sweet. Traces of copper were found in all four, while three showed traces of zinc. Evidently nothing but salt had been added to the contents. The juice of all specimens was very acid, and it was expected that tin would be found since all of the cans were very bright (except on the bottom) but tin was found in none of the specimens. The mere traces of copper and zinc could not be considered as harmful, according to authorities (Blyth) on the subject.

A fresh tomato weighing 115 grams was incinerated and the ash analyzed. Not a trace of zinc or copper was found in the ash, so that these metals probably came from extraneous sources. One litre of the fresh tomato filtered juice required 1.8 grams solid NaOH to completely neutralize it so that canned and raw fruit are of the same acidity. (See No. 3.)

Specimen.	Appearance.	Copper.	Arsenic.	Zinc.	Lead.	Tin.	Mercury.	Preservatives (not looked for)	Adulterants.	Sugars.	Remarks.
Corn 1, selected honeycorn.	Contents yellow; grain large and sound; can highly discolored.	.....	.....	trace ..	....	....	....	.....	.....	None	Corn slightly acid to litmus. Rusty granules from bottom of can.
Corn 2. Sugar corn.	Contents white and sound; can discolored badly.	.....	.....	.....	....	....	....	.....	.....	Dextrose	Corn acid
Corn 3.	Contents white and kernels much broken.	.....	.....	.....	....	....	....	.....	.....	Dextrose — slight quantity.	Contents acid and smell tainted — can slightly resonant.

In the three cans of corn examined representing three canneries poisonous metals were entirely absent except in No. 1, which contained a trace of zinc. The cans were all quite discolored and one was so badly rusted on the bottom that particles of metal adhered to the corn. This part was not examined for metals, and in all probability tin would have been found in it.

Specimen.	Appearance	Copper.	Arsenic.	Zinc.	Lead.	Tin.	Mercury.	Preservatives. (Not looked for).	Adulterants.	Sugars.	Remarks.
Raspberries (White) 1. Canned.	Raspberries whole; large and white. liquid, muddy purple.	.....	.....	traces present.	....	traces	....	.....	Coloring matter— acids purple. alkali green.	dextrose cane sugar.	Contents not at all inviting looking, since liquid was of a different color than raspberries. 10 cc juice= .96 cc N. NaoH
Raspberries (red) 2. Canned.	Raspberries pretty well mashed; color of berries and juice, purple.	.....	.....	traces present.	....	.....	....	.....	.....	dextrose cane sugar.	Contents look and taste like fresh preserved berries. 10 cc juice= 94 cc normal alkali
Raspberries Canned. 3.	Raspberries whole; color, pale yellow; liquid a muddy purple as No. 1.	.....	.....	traces present.	....	traces	....	.....	Coloring matter— acids purple. alkali green.	dextrose cane sugar.	Contents look bad on account of difference in color of berries and menstrum. 10 cc juice= 1.18 cc normal alkali
Strawberries. 4 Canned.	Contents look well; little juice; natural red brown color	.....	.....	traces present.	....	.....	....	.....	.....	dextrose cane sugar.	Contents sound and much more pleasing in appearance than raspberries; taste well; 10 cc=1.17 cc normal alkali
Strawberries. 5. Canned.	Contents look well; berries very small and light brown in color; little juice; can discolored slightly.	.....	.....	traces present.	....	traces	....	.....	.....	dextrose cane sugar.	Contents sound and of good appearance. 10 cc juice= .87 cc normal alkali.
Strawberries. 6. Canned.	Contents look well; berries large and pinkish; more juice than 4 and 5.	.....	.....	traces present.	...	traces	....	.....	.....	dextrose cane sugar.	Contents sound but not so finely flavored as 4 and 5. 10 cc juice= .95 cc normal alkali.
Plums 1. (Lombard) Canned.	Plums green; juice almost colorless: can bright inside.	.....	.....	.....	....	traces	....	.....	.....	dextrose cane sugar.	Contents sound and taste well. 10 cc juice = 1.4 cc normal alkali
Plums 2. (Lombard) Canned.	Plums purple and look well; can very bright Juice rose-colored.	.....	.....	.....	....	traces	....	.....	.....	dextrose cane sugar.	Contents sound and of fine flavor. 10 cc juice=1.66 cc normal alkali

All of the specimens of canned raspberries were of poor appearance, especially the white varieties which had been "improved" by a purple colored dye. All of the three showed traces of zinc and two showed traces of tin;

they were of about equal acidity and had been preserved with cane sugar.

The three specimens of strawberries looked much better; no coloring had been added and the specimens were all of fine flavor. Traces of zinc were found in three specimens and tin in two. They were of about the same acidity as the raspberries and were all preserved with cane sugar.

The two specimens of plums looked well and were of good flavor. Both showed traces of tin. They were more acid than the raspberries or strawberries.

Although enough specimens have not been done to draw any general conclusions, so far nothing out of the way has been found in any of the canned fruits.

Specimen.	Appearance.	Copper.	Arsenic.	Zinc.	Lead.	Tin.	Mercury.	Preservatives: (not looked for)	Adulterants.	Sugars.	Remarks.
Jam, 1. Raspberry.	Of a deep purple jelly.	.....	..	.....	..	..	..	.....	Flavoring, Coloring matter: {acids purple, alkali yellow. Apple.	Cane sugar, dextrose.	Very few genuine raspberry seeds present: color not genuine, synthetic flavor; a filler (apple?) had been used to give it body; 10 cents a glass jar.
Jam, 2. Peach.	Contents yellow colored and jellied; genuine skins visible.	.....	..	.....	..	..	..	.....	Apple	Cane sugar, dextrose.	Genuine fruit had been used in this, but apples were also used; 10 cents a jar.
Jam, 3. Black currants.	Contents jellied and of purple brown color.	.....	..	.....	..	..	..	.....	Apple	Cane sugar, dextrose.	Few genuine black currant seeds or skins; a filler, probably apple, had been added; 10 cts. a jar.
Jam, 4. Black currants.	Contents thick but not jellied; consistency of apple sauce.	.....	..	.....	..	..	..	.....	Apples or turnip?	Cane sugar, dextrose.	Taste of black currants and latter undoubtedly present; coloring same as No. 5; 10 cts. jar.
Jam, 5. Raspberry.	Contents of same consisteney as No. 5.	.....	..	.....	..	..	..	.....	Same filler as No. 4.	Cane sugar, dextrose.	Plenty of genuine strawberry seeds and hairs present; flavor not genuine; no gelatine; 10 cents jar.
Jam, 6 Raspberry.	Contents of consistency as No. 4.	.....	..	.....	..	..	..	.....	Same filler as No. 4.	Cane sugar, dextrose.	Genuine raspberries present in filler; flavor genuine; 10 cts. jar.
Jam, 7. Apricot.	Contents yellow and thick.	.....	..	.....	..	..	..	.....	Same filler as No. 4.	Cane sugar, dextrose.	Genuine apricots used; flavor genuine; 10 cts. jar.
Peach, 8. Jam.	Contents yellowish; thick jelly.	.....	..	.....	..	..	..	.....	Same filler as No. 4.	Cane sugar, dextrose.	Genuine peaches used with little filler; flavor genuine; 10 cts. jar.
Plum, 9. Jam.	Contents yellowish; not jellied.	.....	..	.....	..	..	..	.....	Same filler as No. 4.	Cane sugar, dextrose.	Genuine plums used; no coloring, flavoring or gelatin.

The jams examined were all of the ten cent a jar variety and were without exception "made up." In every specimen examined a filler, which was probably apple, had been added. The specimens variously labelled "True fruit," "Absolutely pure," etc., had in some cases merely a fraction of real fruit present, the balance consisting of filler, coloring, flavoring and sugar. The specimens of plums, peaches and apricots however contained a fair quantity of genuine fruit as did one brand of raspberries, strawberries and currants.

Salicylic acid as a preservative was not found in any of the specimens examined. Gelatin which might have been used for thickening was not found at all. Cane sugar seemed to be the only sugar used for sweetening although glucose may have been added also. One manufacturer used the same coloring for his raspberries, strawberries and black currants, merely varying the quantity used in each. The colors are apparently of the aniline dye variety.

A specimen of marmalade brought in by Professor J. J. Mackenzie, and said by him to have turned the teeth and gums of those eating it black, was found to contain considerable quantities of free iron salts and phosphates. These were supposed to have been added to the marmalade by the servant who made it, with the idea of providing more iron to the blood of the members of the household.

A specimen of "Cream Albumenoid", one pound of which "will produce 32 gals. of thick cream from 28 gals. thin cream and 4 gals milk," was sent in by Dr. Langrill, M.H.O., of Hamilton. It was found to consist of cane sugar, lime and gelatin. It is one of the preparations somewhat extensively used in making poor milk and thin cream appear rich and thick in order that a higher price may be obtained.

Report on Outbreak of Smallpox in Temiskaming District.

By JOHN A. AMYOT, M.D.

To the Members of the Provincial Board of Health:—

Gentlemen,—At the request of Dr. Hodgetts I started for the above district on June 16th, 1904.

At Mattawa, I found a deckhand (Burns) from the steamer "Meteor" of the Lumsden Navigation Company, Lake Temiscaming, in quarantine, in the town's hospital on the river bank reserved for smallpox cases. This patient was suffering from smallpox in the vesicular stage. The rash was discrete and the lesions not extremely numerous, but the patient was quite ill looking. All care was being taken of him. The doctor had removed him the day before from the C. P. R. train coming down from Temiscaming, P. Q. He had then fumigated the car. This patient had been working for the last month continuously on the steamer "Meteor." He reported other cases existing on the steamer. Dr. Haentschel tied the said steamer up on the Ontario side at Temiscaming until such time as she should be dealt with. Whilst waiting at North Bay, Dr. Haentschel telegraphed me asking for the Company if this steamer might proceed as she was to the "infected district." The permission was refused.

On my arrival at Temiscaming I found the "Meteor" still tied up on the Ontario side of the Lake opposite Temiscaming, Quebec, in an unorganized district, and on board found one convalescing, one patient in the scab stage

and one in the vesicular stage of smallpox; and one female, the cook, sick with apparently the initial sickness of the disease. None of these cases had been satisfactorily vaccinated except the cook, but she years before.

Not very far away overlooking the whole district, two houses, about three hundred feet apart, were procured and fitted up for the reception of the patients and as a place of detention for the rest of the crew. I then vaccinated every one on the boat except the patients. The next day, Friday, June 17th, all were moved to the house and a nurse sent for, Dr. Haentschel procuring one for us. She arrived on Saturday. In the meantime every one in the steamboat offices, the railway offices, wharf hands and hotel employees to the number of fifty were vaccinated. The officers of the steamboat company were untiring in giving me assistance and in overcoming difficulties (some object to submitting to necessary precautions) (they do not seem so to them). The way was made as clear as possible by Mr. LaRochelle the superintendent. To complicate things, the terminus of the line is on the Quebec side. There was no medical man there at all. On account of the difficulty of getting an engineer for the "Meteor" to replace the man there, and from the fact that he was not sick and that he showed a satisfactory vaccination mark and that the mark was the result of humanized vaccination, I thought it well to leave him with the boat. Everyone else could be replaced, captain, and all. With the assistance of the engineer we drenched the decks, walls and ceiling and every place that we could reach with boiling water, those that we could not we fumigated with formaline. The mail bags were soaked in bi-chloride of mercury solution, and a new vaccinated crew put on board. In the meantime I had telegraphed to Dr. Hodgetts for a doctor to take the patients in charge. Dr. Marshall was sent and arrived on June 19th. The cook by this time had recovered without developing the disease. I re-vaccinated her then and left Sunday night for the upper part of the lake, arriving there on Monday. As soon as possible I visited with Dr. Field, Medical Health Officer, of New Liskeard, the cases in his town. Saw seven in one house (Hammond's) children and adults, male and female, in the various stages, after the papular, of smallpox, afterwards in a boarding-house (Jelley's) four cases convalescing. Of all these cases only one had previously been vaccinated. The doctor knew of no others so I visited Dr. Hamilton. He was not attending any and was not and did not know of any from his personal knowledge. I hunted up the policeman and through him found three others and got information as to a fourth. This one was in the papular stage. All these cases were diagnosed by the Medical Health Officer as Impetigo-Contagiosa and no precautions had been taken to control the spread whatever.

The first case came off the "railroad construction" in February 4th last. Dr. Field saw him first. The man thought he had smallpox. The doctor laughed at him. He was not satisfied and went to Doctor Hamilton, who pronounced it smallpox and initiated quarantine. Dr. Field as Medical Health Officer was called to see him. He said it was Impetigo-contagiosa and was sustained in his diagnosis by the Rev. Dr. Codd, of Haileybury. All precaution was relaxed. The man recovered in the Windsor Hotel. The girl who brought him his meals subsequently developed it. There were then intermittent outbreaks in the town and afterwards in Haileybury, until at the present time nearly every hamlet in the district forty miles around has it.

Dr. Field's grounds for his diagnosis were as follows:

1st. The initial sickness was short, usually twenty-four hours to thirty-six (nearly all the cases I enquired into this stage was at least 48 hours and in some cases 96 hours).

2nd. The initial sickness was very mild, never severe. (Most of those I saw had been quite ill, some had chills.) (Practically all had backache and pains all over; many of them had quite severe gastric symptoms, nausea and vomiting).

3rd. He had not seen papules in any of the cases. (I felt and saw them in the only case I saw at this stage.) (Dr. McNaughton is quite sure he saw and felt them in two cases he came in contact with earlier in the week. A number of the later cases I saw said they had noticed them themselves. Dr. McLaren, of Haileybury, told me subsequently that he had observed them in all the early cases he had seen.)

4th. It attacked the vaccinated as well as the unvaccinated; (about seventy-five per cent. of the people up there are unvaccinated) again that it had attacked some that had had smallpox previously. (Of all the cases I saw probably not more than two had been vaccinated. In one of them I would be doubtful of the mark.)

5th. That those attacked had been directly infected; (from towels, in beds, dishes, etc.,) and that the cases were all males. (On the "Meteor" two men slept in the same bed, one having smallpox the other a vaccinated man. This other did not develop the disease. I saw nearly as many females with it as males.)

6th. That none of the patients were the worse on account of being attacked by the disease; (one of the patients I saw at Jelley's Boarding-house in the scab stage had been considered one of the strongest men in the town. He said he had been "pretty sick." He looked anaemic and like a man that had come through a severe illness.)

7th. None were pitted after the disease; (I saw several with well marked pitting.)

8th. That the vesicles were exactly like those figured in Fox's Atlas in Impetigo-Contagiosa on the palms even. (So they were exactly the picture of smallpox.)

9th. That the Rev. Dr. Codd who had seen much smallpox in London and in Quebec concurred in his diagnosis. (Dr. Codd still persists in his diagnosis.)

10th. That the report had come to New Liskeard that the quarantine on the railroad had been raised before the expiration of the regulation time after the visit of some persons from Toronto. (Dr. McLaren, the medical man now in charge of this division medically, assured me that quarantine had run its required time; that all were well in the camp at the raising of the quarantine; but that some four days before its close a gang of men had come up from Cape Breton. (It was afterwards found out that smallpox existed down there before they left.) (It was one of these men that had gone over to New Liskeard early in February.)

11th. To have his diagnosis concurred in he had put up $100.00 to pay the expenses of an expert from below. I'm afraid the doctor is going about with a bandage over his eyes.

On the afternoon of the day of my arrival the Mayor called a meeting of the Local Board of Health to which were invited all interested citizens. A large crowd was present. The Mayor and each member of the Board spoke; also all the doctors immediately concerned. I merely told them that it was smallpox, or at any rate what was called smallpox in Lower Ontario and that it had to be dealt with as such, and that it was their duty to act and that the Provincial Board would look on. That all the other infected districts would be required to do the same and that the Provincial Board of Health would look after the unorganized districts; that all argument had best be

left aside and that all buckle down to work before the damage to their district was irreparable. I advised them to immediately build a temporary smallpox hospital and put all the infected therein, in those cases that opposition (severe) would arise from to consider their houses as hospitals to run out the required time of quarantine, that all those others in the houses from which cases had been removed, be vaccinated and held the two weeks, that general vaccination be established and that constables be appointed to guard against other infected persons getting into the town, and announced to them that quarantine was established against them for the protection of other districts, that their mail must be disinfected before leaving the post-office, that no one could go on the boats unless vaccinated or previously vaccinated within the required time or having previously had smallpox within reasonable time, and that all baggage would have to be disinfected before being taken on board.

They telegraphed immediately for 800 vaccine points and at once commenced to put my recommendation into effect. A very fair unanimity prevailed so that I think my recommendation will be carried out fairly well anyhow. They will require watching.

I then visited the post-office and instructed the postmaster as to the disinfection of the mail, viz., to wet the bags with 1 in 1,000 bi-chloride of mercury (when the bag is wet it is practically air tight). Then told him to put in with the letters a piece of cotton wool well moistened with formaline in four of water. At the steamboat wharf I had them fence off the landing stage so that they could control the crowd, and had them build a tight box capable of holding four or five trunks, and into this to turn a steam pipe from the boat boiler for five minutes at a time. Any trunks they take on from other ports where this box could not be got, to turn the steam hose on the boxes and trunks in the open, and then informed them about the regulations as to passengers.

The next day I visited Haileybury and found some ten cases just convalescing, several of them were pitted. There were no acute cases. Had a meeting of the Local Board of Health here. I recommended as in Liskeard except as to hospital since there were no acute cases, but warned them that they might soon expect a new crop, and advised them to be prepared to hospitalize them. They immediately sent for 400 vaccine points.

These two towns are watching each other now. Next day I went up to Tom's Town on the Blanche River and saw two cases there. There were cases back from the river on the west side at Judge's Landing. These are unorganized districts.

I then hurried back to Toronto. Dr. Hodgetts immediately sent three doctors up into the district to look after the handling of the cases.

Cases are reported in the Colonization Roads construction gangs, also at Hanbury, Millberta and Unapark.

(Signed.) JOHN A. AMYOT.

Reports of Committee on Sewerage.

PRESENTED TO BOARD AT QUARTERLY MEETING, HELD IN SARNIA, JULY 12th AND 13th, 1904.

Report No. 5 (1904) of the Committee on Sewerage Re the Proposed Extension of Stratford Sewerage System.

To the Chairman and Members of the Provincial Board of Health of Ontario.

GENTLEMEN:—Your Committee begs to report as follows *re* the proposed amending of the McDougal Plan by the building of a sewer on the south side of Cobourg Street, thence north on the easterly side of Waterloo Street, to a manhole at the intersection of the latter street with Water Street, also for the building of a sewer on Kent Lane, carrying it westerly to connect with the proposed sewer on Waterloo Street.

It is recommended that the approval, subject to the usual provisions and safeguards, be granted. The changes are merely matters of detail to suit the grades of certain streets and needs of certain localities.

All of which is respectfully submitted,

Signed,

WM. OLDRIGHT.
ALEX. THOMPSON.
C. A. HODGETTS.

Report No. 6 (1904) of the Committee on Sewerage Re the proposed Drainage of the "Walker House," Kincardine, into the River,

To the Chairman and Members of the Provincial Board of Health of Ontario.

GENTLEMEN:—Your Committee is of the opinion that before the Board give its approval to any plan such as submitted, where the future sanitation of a town may, and probably will be gradually involved, the municipal authorities should submit the same as part of some general plan, with all its data accurately prepared and stated, which is necessary for the intelligent consideration of the same, and, therefore, recommend that the application be referred back to the Clerk of Kincardine for such action to be taken, and that at the same time the Council be advised to consider some system of water supply for the town.

Your Committee has also had before it a letter from a resident of Kincardine, in which he says:—

"I am informed by the Clerk of the Corporation that there are now three or four hotels and a pork factory running their sewage into the river just back of your property. These sewers would be about two or three hundred yards further up the river than the one proposed by Mr. Walker.

"I am informed that these sewers were allowed to be put there by your consent."

Your Committee feels confident that no such consent has been given by your Board or its Secretary, and thinks that your Secretary should so inform the Clerk and the resident above referred to.

All of which is respectfully submitted,

Signed,

A. THOMPSON.
WM. OLDRIGHT.
C. A. HODGETTS.

Report No. 7 (1904) of the Committee on Sewerage Re the Proposed Trunk Sewer for the City of Toronto.

To the Chairman and Members of the Provincial Board of Health of Ontario.

GENTLEMEN:—Your Committee had a Conference with Dr. Sheard on this important question, and after some discussion the joint Committees decided to obtain some data as to the possibilities of minimizing the cost of sewage disposal by irrigation methods as carried out in Pullman, Brocton and the London Asylum. Letters of inquiry have been sent out, and your Committee is awaiting replies.

It was also thought desirable by your Committee that a systematic examination should be made of the sewage of the city, with a view of ascertaining the quality of the same, and for this purpose it has been arranged with Dr. Sheard that the city will periodically collect samples at different points, and the same will be examined by Dr Amyot, and reported upon from time to time. The reports of these examinations will greatly aid your Committee and this Board in arriving at an intelligent solution f the best manner to dispose of the same.

In the meantime, your Committee will visit the sites of the proposed septic tanks. filter beds and sewerage farms, and will collect such other data as they deem neces sary.

Your Committee would recommend to this Board that it refer to the authorities of the City of Toronto the question of the excessive amount of sewage, which it is esti mated by the City Engineer would have to be treated in the course of the twenty-four hours, caused by the great and undue waste of water during the hours from 1 a.m. to 5 a. m. (page 33 of Mr. Rust's report).

A satisfactory solution of this unwarranted condition of affairs would materially affect both the initial and annual cost of the disposal of the sewage by any system involving treatment of the same.

All of which is respectfully submitted,

Signed,

WM. OLDRIGHT.
A. THOMPSON.
C. A. HODGETTS.

Report No. 8 (1904) of the Committee on Sewerage Re the Sewerage of the Village of Bridgeburg,

To the Chairman and Members of the Provincial Board of Health of Ontario.

GENTLEMEN:—The proposal is to initiate a system of sewerage by laying a sewer along the main street, Jarvis Street, with outlet into the Niagara River. Your Committee would recommend that this be allowed, with the proviso that arrangements be made so that the sewerage may be purified before being discharged into the River, at any time that this Board finds it necessary to make such order.

The City of Buffalo, with a population of 300,000, discharges its sewerage into the Niagara River on the opposite shore, and lower down the River receives on the same (American) side the sewage of Tonawanda and other places. As a consequence the water at the Falls on the American side contains a dangerous amount of pollution, whereas that on the Canadian side at the Falls is a good potable water. Hence the necessity of guarding against the ultimate dangerous pollution, but we feel that it would be unnecessarily severe to require at the present time that the Village of Bridgeburg, with its comparatively small population of 1,300, and not at first propos ing to empty anything but surface and sub-soil water into the sewers, should be obliged to treat the contents of the sewers before emptying them into the river. No doubt they will after a short time contain ordinary town sewage, and should this occur to such an extent as to militate against the health or comfort of the users of the river water, the proviso requiring the contents of the sewers to be purified before being dscharged into the river will be put into force.

We notice that Clause 20 of the general conditions in the specifications reads as follows:—

"'Y' branches for house connections shall be 4 inches in diameter unless otherwise ordered."

"Pipes for house drains shall be glazed tile the same as for street sewers."

This probably refers only to the portion of the house drain between the house wall and the sewer; if so, your Committee considers that this portion should be 6 inches in diameter. This would render it less liable to blockage in a situation difficult to get at, and would also make provision for the roof water, so useful in flushing.

We think the portion between the house should be of iron, when new drains are being put in. Of course the usual proviso should be insisted upon, calling for house drainage and plumbing to be efficient, in conformity with the Model By-law as it stands, or with only such alterations as will not impair the efficiency of the system, and endanger the sanitary condition of the houses and the health of the inmates.

Your Committee would also recommend that the attention of the municipality be drawn to Clause 30, sub-sections 1 and 2 of the Public Health Act, and to suggest the wisdom of complying therewith before submitting a by-law, or commencing any such work which may be required in the future.

All of which is respectfully submitted,

Signed,

Wm. Oldright.
C. A. Hodgetts.
A. Thompson.

Report No. 9 (1904) of the Committee on Sewerage Re Sewerage of Wiarton.

To the Chairman and Members of the Provincial Board of Health of Ontario.

Gentlemen:—Your Committee received plans and specifications regarding the proposed sewerage of Wiarton, but the information as to the relation of the proposed outlets to the position of the water intake is so meagre that your Committee cannot make a final report without further data as to the amount and character of the sewage, the direction of the winds and currents, and the position and liability to contamination of the water supply, but would recommend that the Secretary be instructed to visit the town and take such measures as may be necessary to obtain the required information.

All of which is respectfully submitted,

Signed,

Wm. Oldright.
Alex. Thompson.
C. A. Hodgetts.

Report No. 10 (1904) of the Committee on Sewerage Re the Collingwood Sewerage System.

To the Chairman and Members of the Provincial Board of Health.

Gentlemen:—Your Committee has considered the plans, etc., submitted.

The Chairman having remembered that some time previously this matter had been discussed by your Board, and that the Board was of the opinion that the general disposal of sewage was not satisfactory, and that the harbour might become contaminated, and that some provision should be made for the treatment of the sewage whereby the water supply would not become polluted, and the data furnished not being deemed sufficient, the Town Clerk was communicated with, and this additional information is now submitted to the Board.

Your Committee having been informed that a deputation from the Town will discuss the matter before the Board, will await the presentation of the case by that deputation before finally reporting on the question.

All of which is respectfully submitted,

Wm. Oldright.
Alex. Thompson.
C. A. Hodgetts.

Report No. 11 (1904) of the Committee on Sewerage Re Extension of the Sewerage of Ottawa East.

To the Chairman and Members of the Provincial Board of Health of Ontario.

GENTLEMEN:—This is an application for the approval of the Board for an additional sewer outlet into the Rideau River at a point some distance above that at which the larger portion of the sewerage now empties. This new outlet is required on account of the grade of the present main sewer not being sufficient to receive the flow from the sewers in the portion now to be served.

Your Committee having made inquiry finds there is nothing between the points of the present and the proposed outlets to be interfered with by the new proposal, and no conditions different from these under which the present outlet has been approved by the Board, and it therefore recommends that this also be approved.

All of which is respectfully submitted,

Signed,

WM. OLDRIGHT.
ALEX. THOMPSON.
C. A. HODGETTS.

Reports of Committees on Public Water Supplies.

PRESENTED TO THE BOARD AT QUARTERLY MEETING HELD AT SARNIA, JULY 12th AND 13th, 1904

Report No. 1 (1904) of the Committee on Water Supplies Re Oshawa Water Supply.

To the Chairman and Members of the Provincial Board of Health of Ontario.

GENTLEMEN:—Your Committee beg leave to report the application of the Town of Oshawa in reference to water supply, as per plan submitted by W. Chipman, C.E., be approved in so far as it relates to securing the water by means of filter galleries similar to those at Port Hope.

All of which is respectfully submitted,

Signed,

R. P. BOUCHER.
C. A. HODGETTS.

Report No. 2 (1904) of the Committee on Water Supplies Re the Application of the Village of Creemore.

To the Chairman and Members of the Provincial Board of Health of Ontario.

GENTLEMEN:—Your Committee beg to report on the application of the Village of Creemore for permission to secure their water supply from a spring or creek as per plan submitted by John Galt, C.E., and would recommend that the same be approved by this Board, provided the samples subbmitted for analysis be approved of by Dr Amyot, and the ground be personally examined by an officer of the Board to satisfy himself that there is no possibility of pollution.

All of which is respectfully submitted,

Signed,

R. P. BOUCHER.
C. A. HODGETTS.

Report No. 3 (1904) of the Committee on Water Supplies Re the Application of the Town of Grimsby.

To the Chairman and Members of the Provincial Board of Health of Ontario.

GENTLEMEN:—Your Committee has considered the report and plans submitted by W. Chipman, C.E., on this proposed system, and would recommend that action thereon be deferred pending a personal examination by a member of the Committee.

Your Committee would direct the attention of the Board to the fact that a by-law, involving the expenditure of $34,000, has already been voted upon by the ratepayers of the municipality, although the scheme had not been previously approved of by the Board, and are of the opinion that such action on the part of municipal authorities and engineers should be condemned by this Board.

All of which is respectfully submitted,

Signed,

R. P. BOUCHER.
C. A. HODGETTS.

Report of the Special Committee Re Diploma of Public Health.

To the Chairman and Members of the Provincial Board of Health.

GENTLEMEN:—The Special Committee appointed to confer with the Committee of the University of Toronto, respecting the granting of a degree in Public Health by the University, begs to report having met the University Committee, and has pleasure in stating that the Senate of the University has adopted an outline curriculum for the aforesaid diploma—draft of which is herewith submitted.

The adoption of this curriculum marks another step forward in Public Health work in this Province which cannot fail to be of lasting benefit.

All of which is respectfully submitted,

WM. OLDRIGHT.
CHAS. A. HODGETTS.

Curriculum for the Diploma of Public Health.

1. The Universiy shall offer a Diploma in Public Health (D.P.H.) on the conditions hereinafter detailed.
2. Candidates for the Diploma must be graduates in Medicine of this University, or of some other University recognized for this purpose by the Senate.
3. The curriculum leading to the Diploma shall extend over two Summer Sessions of three months each, and one Winter Session of six months.
4. The first Summer Session shall be devoted to Laboratory work in—
    1. Sanitary Chemistry.
    2. Bacteriology.
    3. Parasitology.
5. The Winter Session shall be devoted to—
    a. Advanced General Hygiene.
    b. Advanced General Pathology, including Theory of Immunity and Comparative Pathology.
    c. Elements of Geology, Meteorology and Climatology, in their relation to Public Health.
    d. Sanitary Engineering.
    e. Sanitary Legislation and Vital Statistics.
    f. Clinics on Contagious Diseases.
    g. History of Preventive Medicine and Epidemiology.
6. Candidates for the Degree of M.D. may substitute the foregoing Winter Course for such subjects or portions of subjects of the Fifth Year in Medicine as are not demanded by the College of Physicians and Surgeons of Ontario, at its final examination.

7. The Second Summer Session shall be devoted to a course of Practical work in Public Health under the supervision of the Provincial Board of Health, including the methods of dealing with infectious diseases, inspection of schools and other public buildings, factories and dairies, inspection of water supplies and sewage disposal plants and other forms of municipal sanitation.

8. At the conclusion of the Winter Session an examination will be held on the subjects of the curriculum in Public Health specified in paragraphs 4 and 5, the passing of which shall be a necessary preliminary to entering upon the practical course indicated in paragraph 7.

9. Candidates who have passed the examination, and who present from the Provincial Board of Health a certificate of efficiency in the subjects specified in paragraph 7, will be granted the Diploma of Public Health.

10. The fees for the course shall be $150, payable in two instalments of $75 each at the beginning of the first Summer Session and the Winter Session respectively The fee for the Diploma shall be $20.

11. Up to and including 1907, graduates in Medicine who have acted as Medical Health Officers for a period of two years may present themselves for the examination referred to in paragraph 8 without preliminary attendance on the Courses of Instruction. For such candidates the fee for the Diploma shall be $100.

Report of Nineteenth Annual Meeting of the Association of Executive Health Officers of Ontario.

The nineteenth annual meeting of the Association of Executive Health Officers of Ontario was held in the town of Sarnia, July 13th and 14th, the Town hall being placed at the disposal of the association by the Corporation. The meetings were attended by the members of the Lambton Medical Association, who very kindly adjourned their meeting for the purpose.

The Local Committee of Arrangements was composed of Dr. W. Logie, Dr. D. B. Bentley, Dr. T. Bradley, Dr. R. D. McDonald, Dr. J. A. Bell, Dr. E. Oliver, to whom the success of the social were mainly due.

At the first session, held under the chairmanship of Dr. Hall, Chatham, a few words of welcome were extended by Mr. John Dandy, Chairman of the Local Board of Health, after which Dr. R. Charteris, M. H. O., Chatham Township, read a paper on "Some Questions Regarding the New Health Regulations." The discussion which followed was of an interesting and instructive character and did much to explain away the difficulties supposed to attend the enforcement of the Regulations regarding Scarlet Fever and Diphtheria.

The paper following, presented by the Secretary, dealt with the home treatment of the consumptive, and was a plea for more active work on behalf of the consumptive who is unable to obtain sanatorium advantages, looking to his treatment at home by the adoption of a system of instruction by Local Health authorities.

In a most interesting and scholarly paper Dr. E. Oliver, M.H.O., Sarnia, dwelt on the many conditions causing "Lateral Deformity of the Spine" and indicated how a more careful attention to personal hygiene would prevent the same.

As Dr. J. J. Cassidy, Toronto, was unable to attend owing to illness his paper, "Is the Dust Nuisance the Chief Cause of the Spread of the Common Diseases?" was taken as read.

At the evening session His Worship Mayor Cook and Dr. Hubbard, President of the Lambton Medical Association, welcomed the association in a few well-chosen and most felicitous words, which were replied to on behalf of the Association by the Chairman, Dr. Campbell, London. The papers read at this session were: "Diphtheria and Its Treatment," by Dr. W. Logie, Sarnia; "The Interpretation of Water Analyses," by Dr. John A. Amyot, Bacteriologist of the Provincial Board of Health, and a most interesting and instructive one by Dr. P. H. Bryce, Ottawa, on "The Public Health Aspect of European Immigration to Canada."

The third session, held on Thursday, was occupied by the presentation and discussion of the following subjects: "Patent Medicines, Drug Foods and Fake Drugs," by George G. Nasmith, M.A., Ph.D., Chemist of the Provincial Board of Health, Toronto; "A Perfect Sewerage System for Rural Homes," by M. J. Quinn, Esq., Provincial Mechanical Superintendent, Toronto; "Suggestions on Sanitary Condition in Factories and Workships, and How Improved by the Co-operation of Local Health Officers," by Thos. Keilby, Esq., Provincial Factory Inspector, Toronto. As Dr. W. T. Connell, Kingston, was unable to be present his paper "A Study of Mechanical Filtration of Water," was taken as read.

The members of the association were entertained in the morning of Thursday by a visit to the Sarnia tunnel, special observation cars being provided for the purpose by the Grand Trunk Railway. In the afternoon a trip was made on the river and Lake Huron, and in the evening a very reserche dinner was tendered by the Mayor and Corporation in the Bell Chamber, where speeches, song and music wiled away several happy hours.

The following officers were elected for the year 1904 and 1905: —

Officers for 1905:

President, Dr. P. H. Bryce, Ottawa; Vice-President, Dr. C. L. Campbell, London; Secretary, Dr. Chas. A. Hodgetts, Toronto; Council, Dr. Logie, Dr. Sinclair, Dr. McAlpine, Dr. Charteris, Dr. Skinner.

The several papers presented at this meeting appear in this number of the Journal.

Some Questions Regarding the New Health Regulations.

By C. R. CHARTERIS, M.D., C.M., M.H.O., Township of Chatham.

Mr. President and Gentlemen,—When the Secretary wrote inviting me to prepare a paper for this meeting I hesitated for some time before replying partly because I felt that I had not the time at my disposal and more particularly because I felt my inability to prepare a paper such as should be read at a meeting of this nature. While thinking the matter over it occurred to me that a discussion on the new Health Regulations would be of advantage to Medical Health Officers and it is with this object in view that I present to you this very imperfect paper. The subject I have chosen is entitled "Some Questions Relating to the New Health Regulations." You are aware that about two years ago the Provincial Health Department issued new regulations concerning contagious diseases such as Scarlet Fever and Diphtheria. I shall confine my paper to three clauses of these regulations, and shall take up first the clause relating to the case by the municipalities of those suffering from contagious diseases. This clause provides that municipalities shall provide hospital accommodation for all persons affected with contagious disease. Now, Gentlemen, I ask this question: Is it the duty of the Municipality, be it City, Town or Township, to erect hospitals for the care of these cases, and how is it to be done; or is it the duty of the householder or parents to isolate the cases and provide proper attention. The former appears to me difficult to carry out, as to erect and equip an hospital suitable for such cases requires a preliminary expenditure of at least three thousand dollars and for maintenance annually at least one thousand.

How is this to be effected? I cannot answer, and hope some of our members will be able to solve the problem. Then again in cities and towns where hospitals already exist and have contagious wards or wings attached that city or town send these cases to the hospitals and pay for their maintenance while in many instances the head of the house is earning from $1.50 to $3.00 per day, yet we are compelled to pay at the value of from $5.00 to $10.00 per week at the hospitals for members of their families who are afflicted with one of the contagious diseases because the Provincial Health Regulations say we must provide hospital accommodation. Is it right that a municipality should be taxed for the maintenance of patients whose parents are earning such wages as previously stated, it appears to me not, but how are we to overcome the difficulty?

The second clause I will refer to is the one relating to the time of isolation for scarlet fever cases. This is fixed at six weeks as the minimum time, in many cases of mild form of scarlet fever disquamation will have completely taken place in three weeks and it seems a hardship that a child should be confined to quarantine for another three.

The third clause is the one referring to Diphtheria, the period of quarantine is placed at 28 days when in many cases all danger of infection is over in 14 days, yet the patient must be quarantined for another 14 days and the expense go on as in the scarlet fever cases. These latter clauses I think might be amended so that the Medical Health Officer should have discretionary power to raise the quarantine in the case of scarlet fever at 3 weeks or in diphtheria at 14 days on receipt of a certificate from the attending physician that all danger of contagion or infection has passed. In conclusion let me say this paper is as I told the Secretary in reply to his request for a paper that it would be a paper of Queries, not one offering information but seeking it, as I am sure many of you are like myself M.H.O.'s who have experienced great opposition in enforcing the regulations as they are at present.

The Home Treatment of the Ninety and Nine.

CHAS. A. HODGETTS, M.D., L.R.C.R. (Lond.), Sec. Prov. Board of Health, Member Royal Sanitary Institute, Fellow Royal Institute of Public Health.

Who are the ninety and nine? The remainder of each one hundred consumptives in this province who have no means of securing the benefits and educational advantages of sanitoria treatment—and who for many years to come will remain unprovided for, and many of whom will fill consumptives' graves before public inertia has been aroused into action whereby the necessary means are provided for their care either by municipalities or public charity.

In the meantime what should be done by Health Authorities for those afflicted, and what measures should be instituted for the circumscribing of the dangers arising to the general public from the fact that each consumptive is more or less a centre of infection to the household in which he resides, and in a certain degree to the community in which he dwells, and upon whom sooner or later he must become a burden.

While we talk, plan and strive for great things along the line of municipal sanitoria the grave disease continues its onward course to a sure and certain goal. Is it right, is it proper, for leaders of Preventative Medicine, for the medical profession and for the general public, to stand idly by discussions of the ideal—while refrain from instituting measures which simple though they may be, yet would do something to lessen the possibility of infection and at the same time be of perhaps permanent benefit to a large percentage of the ninety and nine?

Every month over 200 persons die of the disease in this province alone—or a death-roll of over 2,500 annually, as shown by the returns of the Registrar General, and what has been achieved? With an increase of scarlet fever the Provincial authorities immediately introduce stringent regulations for the immediate prevention of a disease which does not entail a tithe of the suffering and hardship or financial loss as does Consumption. Local Boards rush to enforce these regulations, and hospitals are provided for the use of the sufferers, who are chiefly children. But with this disease virtually nothing has been done by either Provincial or Local authorities. An Association has been incorporated which has for its aim the very laudable one of providing for the tuberculous persons of this Dominion. A task which it will take several similar associations acting in conjuction with Municipal Sanitoria provided for the necessitous cases—to fully overtake. Before the ideal is attained, we want the "First Aid" for the consumptive—something that can be done and should be done at once, before the sanitoria arrive—for as I would prefer, the "first aid" in the case of an accident before the doctor arrives, rather than no aid at all—so I would have something done for the ninety and nine—before the dawn of the sanitoria millennium.

For the immediate present we should concern ourselves with the home treatment of the ninety and nine; by this expression I mean not so much the medicinal treatment, as I do the prophylactic and the hygienic—in brief, the betterment of his daily environment. As the youth of our country is the feeding ground for the disease, they should be educated sufficiently to be able to avoid the pitfalls which lie before them.

The first step in this important work now awaiting us, is to institute a system of notification and registration of all cases of phthisis, for how can we expect to know our friends unless they are introduced to us—virtually at present the consumptive is unknown to Health Authorities. A small percentage are either in sanatoria or have engaged medical care and instruction, but

what is known of the great mass? many of whom are ignorantly infecting those of their own household.

Given the introduction, Health Authorities should be prepared to keep a friendly eye on each one, and instruct by counsel and advice, both oral and by means of pamphlet, that it is possible to maintain a fair condition of health and possibly affect a cure, by following a certain course of living even in his own home—these briefly stated are fresh air at all times, ample sunlight, simple and nutritious diet, regular habits of life, and too, they can and should take every precaution to so dispose of sputum, which is the chief source of infection to others and re-infection to themselves.

Once the instruction is given, it should be followed up by repeated visits of intelligent visitors—for the consumptive is human like all of us and given to back-sliding.

When space will permit, he can and should live in a properly constructed tent all the year round upon his own premises in close proximity to his own family.

For the necessitous cases, either opportunities should be offered in the out-patient department of all hospitals for this special class of cases, or dispensaries provided, where under trained medical men treatment can be given all who require it, at the cost of the municipality.

With the general introduction of these simple provisions, there will follow a marked decrease in a few years in the number of cases, many in the early stages will be restored to health and the public will be gradually educated to the need of Municipal Sanatoria, and the private institutions started for gain or by charitable organizations, will be benefitted.

To wait as we have been doing for the public to be educated to the necessity for Municipal Sanatoria is wrong and calls for severe censure, because it is not in accord with the principles of preventive medicine.

Is it not true we have been striving for an ideal, and failing in the meantime to institute something feasible, practical and beneficial.

To organize the Home Treatment of Tuberculosis is the need of the hour, and calls, in my opinion, for the immediate action of provincial and local authorities.

No effort has been made in this short paper to detail a plan of action; the object being to arouse interest in this important and hitherto neglected phase of the question.

From what I saw at the Phipps Institute recently in Philadelphia, I am fully convinced there is work that can be carried on in our cities and towns, carried on too at the minimum cost, and result in a vast amount of good.

In the institute just referred to, situated in the densest portion of the city, under sanitary conditions far from the best, hundreds of consumptives are treated, and what is of perhaps far more reaching benefit, educated how to live so that those nearest and dearest to them may not be exposed to the deadly infection of consumption. I do not intend to refer to the excellent work which through the benefactor the institute is enabled to render to the sufferers by means of suitable food in the daily supply of eggs and milk, nor yet to the benefits arising to the medical profession through the pathological branch—these do not concern the points which this short paper is intended to emphasize.

That work in this direction is practicable I am convinced,—that it is necessary, must be apparent to all; that it will result in immeasurable good to all, is a fact; that it can be economically carried out has been demonstrated and that it is our duty to fill in the gap that must necessarily intervene between this and the providing of Muncipal Sanatoria or hospitals for all cases cannot be gain said.

Spinal Deformity.

DR. E. OLIVER, M.H.O., Sarnia.

Numerous are the influences to which the human race is exposed, the two great extremes—good and evil—are undoubtedly the principal from whence arises man's greatest happiness and his utmost misery.

What thinking mind, what scientific medical practitioner, has failed to take a retrospect of the age of babarism and ignorance; and, contrasting them with more modern times, must have been struck with the long catalogue of diseases, of human sufferings and human anxieties. The dark and unintellectual Past bears no proportion to the boasted high state of civilization and refinement of the Present. Nor does this effect of civilization apply solely to the human species; for it is a fact that, so soon as the brute creation is subjected to our domestic habits, by diet, breeding and training, than they, too, lose their native character and are liable to all the ills of artificial life, so that we see plainly, and it causes a feeling of pain, that the progress of knowledge and refinements of life tends to bitterness and evil. Yet, after all, we must confess that education is the "bright morning of life, for years of misspent time"—the greatest blessing that man enjoys. But the mind of man, unfortunately, as well as his physical frame, have not been, as a rule, moulded and trained as they should have been, owing to oversight or wilful neglect. It would have been well for mankind had the analogy between the vegetable and animal kingdom always been kept in view and fairly pursued, so beautifully described by the author of "The Seasons," in the trite and well-known lines in praise of instruction.

"Delightful task to rear the tender thought, and teach the young idea how to shoot." But it is with regard to man's physical education, as respects his bodily frame and development of form that I propose to treat, and my intention is to confine my remarks to that very serious and frequent disease "Deformity of the Spine." The affection we are about to describe is by no means one of the present day; for we remember reading, not long ago, that towards the 16th Century, a celebrated doctor, Pinaus, who flourished at that time, asserts that of "50 females of the higher or more civilized ranks of society, scarcely two could be found who had not the right shoulder higher and more projecting than the left," the nrst characteristic of spinal deformity. There are few mothers who are not familiar with this characteristic, in common parlance said to be "growing out." Now, if we proceed with an examination we shall find that the central grove of the back deviates from a straight line, that there is a greater distance between a given point of the original perpendicular spinal line and the top of the elevated shoulder bone, than between the same point and the corresponding top of the other side. As the affection progresses, the gait and carriage of the sufferer becomes awkward and shuffling—the clothes cannot be made to fit well upon her, if a girl—they appear to be drawn to one side, generally the right, while the right breast is enlarged and the corresponding collar bone displays a proportionate elevation—in shore the child is deformed—her backbone is distorted and in a multitude of instances, were even thus early, absolute and permanent distortion can be prevented only by care and attention of no ordinary kind should the infirmity advance still further, perfect distortion of the spinal column will result from the action of the muscles of the lower part of the back on the opposite side, producing a double curvature. Nor does the mischief end here; the ribs, too, in consequence of the altered state of the spine, partakes in the changes going on, affecting the functions of the viscera of the thorax, producing consumption, or at least exciting this fear-

ful disease, into life and activity in those predisposed to disorder of the lungs. Finally, the pelvis, or the bones on which the spine rests, becomes involved, and the result of which in the female, is of serious import. Such distortions are by no means uncommon, and because they are common, are supposed to be incurable.

Now, what are the causes of this affection? It has been asserted, and doubtless with much truth, that physical discipline in early life, from its faulty management. But it occurs in the ranks of the humble as well as among the more wealthy and civilized portion of the community. With the former class, their daily avocations may be considered as the mechanical cause in contradistinction to the physical cause on the delicately educated female; but its *modus operandi,* with respect to the influence exerted on the constitution is about the same. Some ascribe the affection to hereditary predisposition—debility of constitution, etc.

No doubt, the latter, debility, materially facilitates the supervention, and contributes to confirm disorders of this nature, caused by the soft and yielding state of the bones in early life. And here we are reminded of another frequent cause of spinal disease in young people, and especially females —I refer to the time alloted for the acquisition of scholastic knowledge. How little do teachers imagine the effects they produce on the bodily structure of their young charge when insisting on excessive mental application in their anxiety to keep pace with the general advancement of knowledge. Few teachers have a right conception of the frame-work of bones they operate upon and many a parent has had cause to regret the unusual proficiency of his child to the detriment of health and a sound frame. But prominent among the causes of affections of the spine stands the restraints of modern female attire, preventing to a very great extent, the proper play of the muscles, which are placed by nature and arranged in pairs on either side of the spinal column, placed there to enable man to bend this long bony pillar at will, in any requisite direction, within given limits, as well as to secure its return to its normal vertical positon. And when we remember that it is necessary to the absolute integrity of the vertical state of the column, that the actions of every individual muscle should be free and unimpared, surprise is not excited in the physician's mind at the result of the prevalent, because fashionable, custom among females, of disfiguring their natural and normal bodies, by lacing themselves in corsets—furnished with any amount of steel and bones, completely violating the law of our animal economy, that "wherever the natural and healthy operations of any organ, or set of organs are either not regularly, or not sufficiently exercised, the organs whose operations are so disturbed or omitted, suffer materially in a proportionate loss of their capabilities of action." In some instances, indeed, the derangement so produced doubtless giving rise to active disease. Were it not for repose at night when all restraint is removed, the organs, so many of which are being constantly and unduly exerted, a renewal of their exhausted nervous power, and vital energy, for the performance of their wonted office, would not be obtained. We smile at the peculiar notions of the Chinese, who think a woman's foot much more beautiful when subjected to a squeezing process, to reduce its normal size, but most assuredly we are little in advance of the barbarians in this respect, for we, too, squeeze our wives and daughters, but, unfortunately, select a much more vital part of the system to operate upon, viz., the chest, in the cavity of which is contained the most essential organs of our being. The child needs no such bandaging, yet how often do we find it subjected to the process by vain and thoughtless mothers, for the purpose of moulding into shape their daughters' bodies, the fashion of the times may consider most becoming. But it has been asserted that this kind

of mechanical support as it has been termed, has a tendency to prevent as well as to remedy distortion of the spine. Now, we admit that a judicious compression to muscles much called into exercise, is very beneficial; but we object strongly to the use of stays during the development of the young girl, the perpetual restraint under which many are kept, the inordinate calls made upon her mental, as well as physical powers rob her of that exercise to which nature prompts, and fritters down, subdues or destroys her motions. Yet by exercise alone, can the voluntary muscles acquire vigor and power, or the circulation be properly balanced, and the reciprocal dependence of the various systems upon the body upon each other be maintained. It has been asserted by able writers on this subject that the lateral curvature is never found except in females, and, then, inseparably connected with constitutional disease. But facts prove, I think, this statement to be erroneous—a wrong conclusion. For artists, of both sexes, are liable to lateral curvature; clerks and other sedentary persons frequently contract the curvature. But we believe females are the principal sufferers owing, to a very great extent, to their dress, want of proper exercise and pernicious habits of school life. And, because the fair sex do suffer, so should every medical man, at all events, see to it that his influence, skill and knowledge be deviated to the channel most likely to effect a reform. The might that slumbers in a peasant's arm, equals what may be referred in the delicate girl to some tremendous excitation of the nervous system. What wonder, then, that we see so many "fashionables" with a diseased heart, a languid circulation, pale faces, cold extremities, hysteria, etc., etc., all pointlug to the feeble powers by which the blood is propelled through the system it is intended to invigorate and sustain? Under the circumstances, can we expect a proper deposition of earthy matter, on which alone the necessary consolidation of the bones depend. Where nature is willing to do her part, art is evoked to devise means to lessen the supply of this life-giving principle. No wonder the bones of the spine, in young persons subjected to treatment we have been describing never become firm, and consequently readily yield to deformity. But a still greater evil may yet exist from this affection, if we believe as many learned men do that a bent back, a wry neck, or a high shoulder may be propagated in the progeny of such a parent, though no other hereditary constitutional peculiarity or disease exists. Cuvier, the author, on the domestication of Mammiferous Animals says, "It is a fact, universally recognized, that the young of animals have a very strong resemblance to the individuals which have given them life. This fact is as obvious in the human species as in any other; nor is it less true with reference to the physical qualities than to the moral and intellectual faculties. Man thus obtains the privilege, not always the most enviable, of stamping upon his posterity as double identity; that derived from physiognomy, applied to the development of the form, as well as the features of the face; and that of constitutional peculiarity and organic debility, varied according to the character of his habits and manners, which are thus continually reflected and transmitted to posterity."

Numerous have been the contrivances adopted for the prevention of deformity, which is always easier than the cure, such as dumb bells, back boards and braces; but the recently introduced light and beautiful Callisthenic exercises and military drill, are well calculated to have a salutary action on the muscles. Free exercise in the open air, friction with the hand, electricity along the whole course of the spine, the tepid douche bath, often prove of incalculable utility in imparting a healthy and vigorous circulation to the muscles of the back, and thereby materially augments their power. Such, then, is a brief, but I trust sufficiently intelligible description of the deformity which may, and does prove detrimental and prejudical to health.

That the influence of the restraints, the fashions, and the customs pointed out in my paper is really the principal cause of the deformity we have been considering, has ceased to be a matter of doubt with those who have carefully investigated the subject. Nothing tends so much to the due performance of all the mental operations, as a sound, a vigorous and well-made frame. And I cannot help thinking, Mr. President, that the right education of women is of the utmost importance to human life. There is nothing more desirable for the common good of all the world, since as they are mothers and mistresses of families, who have the first forming both of body and mind.

The treatment of curvature of the spine necessarily depends upon the extent and degree of the deformity. The surgeon has certain measures at his command which may be grouped as follows, viz. : Forcible, Gradual, Flexible Corrections and Muscular exercises so that it may be said that in addition to such mechanical means as may be necessary to retain for a while the patient in a correct attitude, until the bones have attained a sufficient amount of growth to arrest any further increase of distortion of the individual vertebra. But all mechanical appliaances must be supplemented by very careful and thorough muscular development, which is the basis of all treatment of a permanent cure. Of late, successful attempts have been made in the correction of severe twists, by section of the ribs, followed by pressure correction. But even where operative measures are attempted, gymnastic exercises, such as the recently introduced Callisthenic exercises and military drill are necessary for a long period, but are well calculated to have a salutory action on the muscles. Free exercise in the open air, friction with the hand, electricity along the whole course of spine, the tepid douche bath, all prove of incalculable utility in imparting a healthy and vigorous circulation. These measures demand, to a great degree, an exercise on the part of the practiioner of the art of taking infinite pains.

It is lamentable that many of this sex, on whom so much depends are not only educated in pride, but in the silliest and most contemptible part of it. Those, says a writer, who allow the influence which women's graces have in contributing to polish the manners of men, would do well to reflect how great an influence female morals must also have on their conduct. Nothing delights men more than their strength of understanding, when true gentleness of manners is its associate. United, they become irresistible orators, blessed with the power of persuasion, fraught with the sweetness of instruction, making woman the highest ornament of human nature. It is not the smiles of a pretty face, the delicate tint of complexion, the enchanting glance of the eye, the beauty and symmetry of person, nor the costly dress or decorations that compose woman's loveliness. It is her pleasing deportment, her chaste conversation, the sensibility and purity of her thoughts, her affable and open disposition, her sympathy with those in adversity, her comforting and relieving the afflicted and distressed, and above all, the humbleness of her soul, that constitutes true loveliness.

What is the blooming tincture of the skin
To peace of mind, and harmony within?
What the bright sparkling of the fairest eye,
To the soft soothing of a calm reply?
Can comeliness of form, or shape, or air,
With comeliness of words compare?
No, these, at first, the unwary heart may gain,
But these, these only, can the heart retain.

Is the Dust Nuisance the Chief Cause of the Spread of Commoner Contagious Diseases.

By J. J. CASSIDY, M.D., Member of The Provincial Board of Health.

It has been remarked by some one that there is no practicable preventative of dust. From the macadam roads and mud roads a quantity of dust comes, and a prolific source of it is the unpaved and unclean condition of the back lanes of towns and cities. These sources supply much of the material which is conveyed by traffic to the asphalt and stone pavements. There it is dried and pulverized into minute particles, which are wafted about freely to the annoyance of the people and the injury of goods displayed in stores.

A lot of dust is also caused in certain trades and manufactories, and also in building operations. The mineral dust, which is given off in establishments where cutlery and files are made, and in gun factories, is especially injurious. Dust of vegetable origin is given off in wood-working manufactories. The hard woods used in cabinet-making are also especially injurious. In factories where hides and feathers are used dust of animal origin is found.

The air contains an immense variety of substances in the form of dust invisible to the naked eye in the open, though capable of being seen, from a darkened room, in the moats dancing in the sunbeams. Minute particles of anything and everything that exists on the earth are liable to be mingled with the air that rests on it.

In 1878-9, Fodor found in air collected at Buda Pesth:—(*a*) bacteria, (*b*) spores of fungi, (*c*) pollen, (*d*) animals or portions, such as legs of spiders and wings of insects, (*e*) mineral substances, fine particles of sand, clay and chalk when the ground was dry; rain appeared not only to prevent these from being lifted, but also to precipitate those in the air.

In towns with macadamized roads, dust and remains of horse droppings, finely powdered by traffic, pass into the air.

In 1861 an investigation was undertaken on behalf of "The Lancet" (London) on the dust of town houses in dry weather. The result of this inquiry showed, that "It consisted of pulverized horse dung and the grindings of shoe leather and starch corpuscles."

In 1876 the dust of New York City was examined by the New York Officers of Health by exposing glass plates to the air. The same substances were present in all of the specimens; street dust, particles of sand and carbon, fibres of cotton, fragments of vegetable tissues, granules of starch, three different kinds of pollen grains, and elements of fungi. As such substances are present in the air we breath and are churned about in our lungs, a bacterium a virus, a *materies morbi*, or whatever the efficient cause of a contagious disease may be when given off from its host's excretions, may also be present in it. Occasionally an article in the lay press will go beyond the record and maintain that the commoner contagious diseases are spread through the agency of street dust. Thus in an article entitled "The Dust Nuisance and Public Health," Winnipeg Free Press, June 1st., 1904, the following statement appears, "An eminent authority says Diseases that may be and without doubt are spread through the agency of street dust include consumption and other forms of contagious tuberculosis, smallpox, measles, scarlet fever, whooping cough, diphtheria and influenza."

Without stopping, therefore, to consider the harm inflicted by mineral particles diffused through the air in mines or factories, to the influence of which many working people are exposed, or the injuries caused by wood dust, elevator dust or the dust which arises from hides or animal remains, I

shall in this paper confine myself to a consideration of the opinions expressed by medical authorities as to the means through which the diseases referred to by the writer of the article quoted are really spread.

In reference to tuberculosis, French in his "Practice of Medicine," publishedin 1903, writes: "Inhalation of dust, to the particles of which bacilli have become adherent, is probably the most prolific source of infection. The dust becomes contaminated for the most part through the expectorations of consumptive persons; but the sputum itself, after drying and becoming pulverized, may be carried by currents of air. The extent to which infection is possible through the medium of the sputum becomes apparent, when we reflect upon the enormous prevalence of the disease and the incomprehensible number of bacilli which each tuberculous person is capable of producing. As estimated by Vaughan, one person in every 60, or 1,050,000 of the entire population of the United States is tuberculous, and Nuttall estimates that each tuberculous individual produces from one and a half to more than four billions of bacilli in 24 hours. Examination of the dust from the walls, floors, and furniture of apartments occupied by consumptives almost invariably reveals the presence of large numbers of virulent bacilli. The air of such apartments, especially after sweeping and dusting contains them. Guerard reports the occurrence of 541 cases in 248 dwellings in a single ward of the tenement district of New York City in which there was a total of 663 dwellings.

"The universal dissemination of this disease through the contamination of the air is largely attributable to carelessness. The danger of infection could be greatly diminished through proper disposal of the sputum. It appears in fact that the disease has become slightly less prevalent as a result of the more general dissemination of knowledge that a tuberculous person is a source of danger to those who come into contact with him. The breath of the consumptive is not in itself infectious, but in coughing and sneezing, even in talking, (Flügge) these persons throw off fine particles of sputum so minute that they float in the air. The inspiration of these particles is a possible source of infection to another person. Flügge, indeed, regards this as a more positive means of transmitting the disease than the inhalation of dry dust.

What are the circumstances which favor the vitality of the bacillus tuberculosis? "It is a parasite and grows best within the animal body, thriving in it, even in the presence of staphylococci, and streptococci and other organisms." What are the conditions which are hostile to its life and growth? "Cold has no effect upon it. Exposure in water to a temperature of 140°F. destroys it in fifteen minutes, although it is capable of resisting ordinary dessication for months. The rays of the sun are fatal to it within from fifteen minutes to several hours according to the season and the character of the sputum or other substance in which it is embedded. Diffused daylight near a window is said to destroy its vitality within a week." (King's Practice of Medicine.)

From these data it appears, that the dust of a room, which has been or is occupied by an expectorating consumptive is decidedly virulent and may prove infective to healthy persons!

When this dust is exposed to sunlight, it rapidly loses its virulence and ceases to be infective. There is no good reason to think, therefore, that tuberculosis or consumption is generally spread by dust which is exposed to sunlight and which may be blown about the streets by the wind. At least we are quite safe in saying, that the virulence of the bacilli tuberculosis in street dust is inferior to that present in dust taken from a sun-less room which

has been occupied by a consumptive. It is equally fair to conclude, that a by-law providing for the disinfection of the latter is of far greater sanitary importance than a by-law, restricting the expectoration of consumptives on the highways.

The virus of smallpox is contained in the mouth and throat secretions of the patient and in the skin eruptions and may be conveyed for considerable distances through the air in the dried epithelial scales and pus cells from the crusted pocks.

On the subject of the aerial conveyance of smallpox the author of Parke's Practical Hygiene, published in 1902, writes: "The exceptional incidence of smallpox in the immediate neighborhood of some of the London Smallpox Hospitals, in which were formerly treated, during epidemic periods, large numbers of cases, can admit of but one explanation, viz., that when a sufficient number of cases in the acute stages are collected together in one building on a small area of ground, the hospital becomes a centre of infection to the surrounding neighborhood."

The evidence for and against this opinion is then given by this author, the most convincing argument being the following: —

"The most recent instance of apparent aerial infection is that reported by Dr. Thresh, from Purfleet, Essex. This village is on the Essex shore of the Thames, almost opposite the Metropolitan Smallpox Hospital ships, which are moored near the Kent shore, and included within a radius of three-quarters of a mile from the ships. Since the commencement of the London outbreak in August, 1901, Purfleet has been very exceptionally invaded by smallpox, and it is difficult to account for these exceptional invasions, except on the hypothesis of aerial transference of infection, as there is little or no communication between the ships and the Essex shore."

An English Local Government Board circular on "The Provision of Isolation Hospital Accommodation by Local Authorities," has, with a view to lessening the risks of infection from smallpox hospitals, laid down the rule that a local authority should not contemplate the erection of a smallpox hospital—first, on any site where it would have within a quarter of a mile of it as a centre, either a hospital, whether for infectious diseases or not, or a work house, or any similar establishment, or a population of 150 to 200 persons; and, secondly, on any site where it would have, within half-a-mile of it, as a centre, a population of 500 to 600 persons, whether in one or more institutions or in dwelling houses. Cases in which there is any considerable collection of inhabitants just beyond the half-mile zone should, says the circular, "always call for especial consideration."

Judged therefore from the standpoint of English hygienic opinion and practice, the statement that the infection of smallpox may be conveyed through the air from a smallpox hospital for half, or three-quarters of a mile, may be regarded as very probable. Dust blown by the wind from a Smallpox hospital, probably contains the infection of smallpox in a virulent form.

In measles the contagion is given off from the secretions of the nose, throat and lungs and from the skin of the patient during the whole period of illness, and the catarrhal stage preceding eruption is especially infectious. It is for this reason, that epidemics of measles are so difficult to control. The infection is not widely diffusible in the air, but clings to clothes and garments. (Parke's Practical Hygiene.)

The opinion that the nasal mucus, saliva and tears of a measles patient, which certainly contain the contagion of measles, may after they have mingled with the dust, be carried about as dust and communicate this disease to healthy persons cannot be regarded as correct. "Measles is generally com-

municated directly by the patient. It may be carried by a third person, by fomites, or by the air. The infection of measles is not virulent or retentive of life like the virus of scarlet fever." (King's Practice of Medicine.) King's remark that measles may be communicated by the air means that it may be communicated by an infected atmosphere. Thus Flint writes in Practice of Medicine, 1884, "The communicability of measles not alone by inoculation, but by means of an infected atmosphere, or by fomites, belongs to the stage of invasion, as well as to the eruptive and desquamation stages."

Of Scarlet Fever, Parke writes: "Infection is given off in the throat secretions and from the skin of the patient during the whole period of illness, but the acute stage of the fever, when the sore throat and rash are most highly developed, is doubtless the most infectious and not the desquamative stage as was once generally supposed. The contagion clings with great pertinacity to the clothes, bedding, and furniture of the sick room, but is not capable of diffusion and dissemination through the air, without loss of virulence, like the smallpox contagion appears to be."

Fordheimer, whose opinion is cited in French's Practice of Medicine, shows that scarlet fever is probably not capable of transmission to any great distance through the atmosphere.

This evidence then is opposed to the aerial conveyance of scarlet fever in dust to a distance.

Of Whooping Cough, Parke writes: "The infection is given off from the secretion of the lungs. It is probably not carried far in the air, but clings pertinanciously to articles of clothing."

The evidence here is also opposed to the aerial conveyance of whooping cough in dust to a distance.

Stevens writes of the etiology of diphtheria in "(A manual of the Practice of Medicine, 1898)" Childhood (between three and six), defective drainage and catarrhal conditions of the throat are predisposing factors. The poison is contained in the secretions of the throat, and may be transmitted through the atmosphere as fomites."

How, it may be asked, is diphtheria transmitted through the atmosphere? In the act of coughing, sneezing or crying the secretions of a diphtheritic throat are thrown into the air, and, if inhaled by persons in the same room may prove infective to them.

Of Diphtheria, Parke writes: "The diphtheritic contagion is given off from the body, mouth, nose and throat and although probably not far diffusible in the air, clings with great pertinacity to infected articles of clothing and bedding."

A point of great importance in estimating the liability of the diphtheria virus is that the action of light and air and alternating moisture and dryness destroy the diphtheria virus with considerable rapidity. The bacilli of diphtheria exposed on a public street would be liable to perish, whereas, if protected from light and deprived of air in a room or in the drawer of a piece of furniture, they would retain their active properties for many months. The evidence is therefore opposed to the view that the infection of diphtheria is transmitted to a distance by the wind.

It was at first supposed, that influenza was spread by an air-borne miasm, and not by personal infection or fomites, in the ordinary ways. The facts relied upon were: the rapidity of spread of the epidemic and the supposed simultaneousness of outbreak upon large numbers of people. But it is now recognized that the rapidity of spread is not greater than human intercourse with modern facilities of travel and that scattered cases usually precede the g neral onset of the epidemic upon a community. The epidemic, moreover,

has often been observed to travel in directions opposed to the prevailing winds and be independent of any particular kind of weather. The chief arguments in favor of personal communicability are (as given by Parke):

1. "The very frequent occurrence of multiple cases in succession in the same household.

2. "In many instances the first case in the household or neighborhood can be traced to exposure to infection from a previous case or to a visit to an infected locality.

3. The special incidence of the disease upon persons liable to come in contact with the infection, *e.g.*, medical men and nurses.

4. Persons living under circumstances in which the possibility of infection can be excluded (prisoners in gaols, sailors at sea, light-house keepers) have escaped influenza altogether.

5. That as a general rule in each country it has appeared first in the capital of ports of entry, and the towns have been infected earlier than country places.

6. That neighboring communities have in certain instances been affected at considerably different dates."

To summarize then: The contention that tuberculosis is spread through the inhalation of bacilli-laden dust is true. It would not, however, be a safe conclusion, that the street dust, wafted about in the open, contains the bacilli tuberculosis in a virulent condition. The evidence points rather the other way, viz., that the dust of a room where a consumptive resides, or has resided, is virulent, but that this same dust parts with its virulence, in proportion to its free exposure to air and sunlight.

Smallpox is conveyed from the sick to the healthy or from one person to another by: (*a*) Inoculation with either the blood or the contents of the eruption or the dissolved dry scabs; (*b*) contact with a proximity to a patient suffering from smallpox; (*c*) formites, the poison adhering to clothes, body-linen, bed linen, furniture, etc. The distance to which the contagion of smallpox can be conveyed through the air is probably considerable, being, according to the English data, from a half to three-quarters of a mile.

Measles, Scarlet Fever, Whooping Cough, Diphtheria and Influenza are communicated from the sick to the healthy or from one person to another directly by the patient, (through contact or sputum) thrown into the air, or indirectly by bed-linen, body-linen, furniture, toys etc., which have been used by the patient; but these diseases are not communicated to persons at a considerable distance, by being wafted through the air as dust.

Why, it may be asked, does the infection of scarlet fever, measles, whooping cough or diphtheria cling pertinaceously to be infected clothes, bedding and furniture of the sick room. Because these articles have not been thoroughly washed, disinfected, aired and exposed to sunlight. It goes without saying, that, if the infective sputa of scarlet fever are allowed to be smeared on the clothing and to dry on it, and if this clothing is preserved in stillness and darkness, the conditions for keeping the infection of scarlet fever alive are of the very best.

To judge from the article on the Dust Nuisance in the Free Press, a notion prevails in the popular mind, that, because street dust contains a large percentage of stable manure, it is, therefore, a vehicle of the commoner contagious diseases. No better proof of the erroneous nature of this notion can be given than the following extract from a report published in The Chemical News, October, 1870, which is quoted in Parke's Hygiene:

"Mr. Tichborne published some analyses of the street dust of Dublin; it contained from 29.7 per cent. of organic matter (at the top of a pillar, 134 feet high), to 45.2 per cent. (in the air of a street); it acted as a ferment and

reduced nitrate of potassium into nitrite; it had therefore a strong deoxidizing power.

The inference is quite obvious: Street dust, which acts as a ferment and has a strong deoxidizing power on the sputa of scarlet fever, diphtheria, measles, whooping cough or influenza, is capable of destroying instead of enhancing the virulence of these sputa.

The worst thing that can be done with infectious sputa is to preserve them, pieces of cloth of little value should be used to receive them and they should afterwards be burned. Soiled underclothing, bed-linen, etc., should be steeped in a solution of corrosive sublimate, of the strength of 1 to 1,000 for twenty-four hours. These articles should then be boiled or exposed to superheated steam for one hour. Mattresses and blankets, soiled by such sputa may be burned, or they may be steeped in the mercuric chloride solution, 1 per 1,000, and afterwards immersed in boiling water for one hour (mattresses to have the covers removed after moistening).

If, however, the infective sputa of communicable diseases should mingle with street dust, sooner or later, they will be deoxidized and deprived of their infective power through the operation of fresh air and sunlight, together with, as Tichborne says, "the deoxidizing power" of the very dust with which they are mingled.

Diphtheria and Its Treatment.

DR. W. LOGIE, Sarnia.

Diphtheria is the taking into the system of a germ known as Klebs Loffler bacillus, either through the air we breathe or in water or liquids drank that are contaminated with the said bacillus. The effect of said bacillus is to produce systemic poisoning, in the same manner as other toxins are taken into the sytsem, such as typhoid bacilli, tubucle bacilli and etc. Each bacilli has a favorite location or feedng ground, and in the case of Diphtheria the nidus of this germ grows and develops upon the mucous membrane of the upper respiratory passages which produces an inflammation of the mucous membrane, with or without Pseudo Membrane: so that we can define diphtheria as an acute infectious and contagious disease with or without pseudo membrane, produced by the presence and development of Klebs Loffter bacillus. The classification of the acute inflammation affecting the nose, throat, etc., has not reached a satisfactory stage as we cannot depend on the existence of a pseudo membrane, as diphtheria, whilst the great majority of pseudo membraneous inflammations of these parts are due to the action of the diphtheria bacillus. A considerable number are produced by other bacteria, such as the streptococci and staphylococci, so that it is impossible to make a positive diagnosis without the aid of the microscope.

We, therefore, have to classify these pseudo membranes into two classes: (1) true diphtheria, (2) pseudo diphtheria. *True diphtheria* are those in which we include all cases of acute inflammations with the presence of the diphtheria bacillus. No matter whether this be pseudo membrane or not, nor whether there be other bacteria present in same culture. It must be observed, however, that the presence of Diphtheritic Bacillus without other clinical symptoms, does not constitute diphtheria, any more than the presence of pneumonococci in the mouths of healthy persons constitutes pneumonia.

Pseudo Diphtheria include those cases resembling diphtheria but not showing the presence of Diphtheritic Bacillus in cultures from the affected parts, and such cases are commonly seen in conjunction with scarlet fever and measles with the presence of Streptococci and Staphylococci and Pneumonococci.

It is necessary to classify these Pseudo Membranes according to their location, viz: Nasal, Pharyngeal or Tonsillar and Laryngeal, as the location materially affects the symptoms and course of the disease.

Symptoms: Taking the symptoms according to their location of the diphtheria, we will take first Nasal Diphtheria, which is characterized by more or less obstruction of the nares, with a thin muco-purulent discharge and with excoriation of the anterior nares. In some cases Pseudo Membrane may be seen in anterior nares or descending to pharynx from the posterior nares. The degree of toxaemia varies, and prostration is not marked except in very young children. Temperature ranges from 100° to 101°, and the chief danger is in the extension to pharynx or larynx by continuity of tissue. The affection is often protracted despite careful treatment.

In Pharyngeal or Tonsillar Diphtheria we will first take those cases in which there is no membrane, and they are more likely to be recognized in institutions or families where there is an epidemic of diphtheria as follows: child complains of sore throat, the mucous membrane or pharynx and tonsills are reddened and swollen and has slight rise of temperature, and when cultures are made from swabs taken from these throats, Klebs Loffler bacillus are often found. The mildness of these cases depend on the virulence of the bacilli or the small number of bacilli or to the resistance of the individual. But the bacilli derived from culture from such cases may prove to be very virulent, and may readily be the means of communicating a severe and virulent type to others. In cases of Membrane, they are characterized in mild cases by the presence of more or less pseudo membrane upon the tonsils, fauces or pharynx, with a moderate amount of toxaemia. The patient complains of sore throat and has a temperature of 100° to 102°. On examination of the throat, we usually find one or both tonsils or pharynx reddened, swollen and presenting on their surfaces one or more patches of pseudo membrane. These patches may be difficult to distinguish from the yellow plugs seen in Follicular Tonsillitus. The membrane is usually adherent to the under-lying tissues, and when removed, will leave a bleeding surface. The membrane is usually white-gray or grayish green in color, and patches are of irregular form, and usually exists a distinct swelling of glands in the neck, but nothing short of a bacteriological examination will enable us to a diagnosis with certainty. We must be ready at any time to see an apparently mild case develop into a severe type. In severe cases the symptoms are more pronounced. They are usually characterized by sudden onset with chills, vomiting, high fever, and severe sore throat, prostration very marked: or it may in some cases start very mild and gradually develop the severer symptoms. The range of temperature is no criterion, as we may have very moderate temperature and yet the condition may be very grave. The submaxillary and cervical glands are swollen and very tender. The Pseudo Membrane gradually extends to tonsils, fauces and pharynx, and is of a thick gray green or even black in color, and if removed from the underlying tissues, leaves a bleeding surface. The membrane may extend to the nares and larynx, and may also invade the mouth and lips, eustachian tube and up through the drainage canal to the conjunctiva. The constitutional depression becomes more marked: the pulse becomes more rapid and feeble and strength fails steadily. The increased swelling of parts renders swallowing impossible and respiration seriously interfered with, and when at-

tempts of swallowing are made we find the liquids regurgitate through the nose, due to obstruction or early paralysis. As the diphtheria advances, we find the urine scanty and high colored and contains albumin in some quantity. The mind may remain clear, but in some cases, as the toxaemia increases they become dull and stupid, and delerium develops. Convulsions may occur either early or late in the disease, from the toxaemia or from uraemia. Death from toxaemia alone may result, but it is generally due to one of the various complications and most important of these, is pneumonia, which may follow either Nasal, Pharyngeal or Laryngeal Diphtheria. It is said that this complication is dependent upon the other bacteria and not upon that of the diphtheria bacillus, and if we further desire to reduce the mortality table, an effort to prevent this complication and greater tact in the method of its treatment will have to be adopted.

Before leaving this type of cases, I wish to refer to a variety known as mixed cases of infection, which include all those cases where we find along with the diphtheria bacilli, other bacteria, such as the streptococci and etc., which exert a special influence upon the cause of the disease which is very severe from the first, and are not specially distinguishable from ordinary true diphtheria, unless by the aid of the microscope.

In the class of cases known as Laryngeal Diphtheria, they are characterized by quite a different set of symptoms, and the clinical picture does not present such a variety as seen in the throat of Nasal passages. The anatomical form and structure of the larynx are quite different to the other regions. In describing Laryngeal Diphtheria I include all those cases that formerly were called membranous croup, for they are considered the same disease, from the fact that the microscope shows in membranous croup the presence of Klebs Loffler bacillus, and also from the fact that membranous Croup is proceeded by disease of the throat where patches have been recognized and in many cases, no doubt escaped detection; and the clinical course of both diseases are the same. The reason why we have no great enlargment of the glands of the neck is so called membranous croup is that the absorption of the membrane of the larynx is slow, because the lymphatic distribution of the upper part of the larynx is not very abundant. Laryngeal Diphtheria begins gradually with a croupy cough and voice and slight stridor with inspiration, temperature about 99° to 101° whilst in Acute Laryngitis, the temperature usually is abrupt and rises about 103. As the disease progresses, we have hoarse cough, croupy inspiration, gradual loss of voice: suprasternal and infrasternal recessions : restlessness and evidence of poor circulation, and with the laryngoscope, membrane may be seen in the larynx. As the agony increases, the finger tips get blue: the lips livid: face pale; and forehead and body are bathed in perspiration, as the child struggles to overcome the increased obstruction to the breathing. It tosses itself from side to side and sits up and supports itself in order to give free play to all the accessory muscles of respiration, in a vain effort to shake off the tightening grip upon the larynx. It is now assumed that this grip in the larynx is due to muscular spasms rather than due to the deposits of membrane in the larynx, with its accompanying swelling of parts, because how often do we notice as the child wakens from a sleep or in a state of excitement, its breathing is very much intensified. Unless relief comes soon by appropriate treatment, the patient will die from suffocation. Such an outcome is most common in infants who succumb in 24 to 48 hours from the onset. Broncho pneumonia is a common complication of laryngeal diphtheria. It may develop as a result of direct extension of the membrane from the larynx to trachea and bronchi, or it may result from the inspiration of the inflammation exudate containing pathogenic

bacteria. Its presence is indicated by a sudden rise of temperature, more rapid respiration, greater cyanosis usually numerous coarse o. subcrepitant rales over both lungs.

Treatment.

If we as physicians are called to see a patient with a suspicious membrane in the upper respiratory passages, either in the nasal passages, pharynx, tonsils or larynx, and having carefully noticed the clinical symptoms and surrounding circumstances and history, and there is a probable doubt in our mind of its being diphtheria, we should not wait for the diagnosis to be confirmed by a microscopist: for to the majority of practising physicians, a microscopial examination will be impossible, and even if competent to make it himself, it requires time to make a culture and have the same examined. Therefore, I maintain, that the physician's first duty is to give his patient the benefit of a doubt and proceed at once to give that treatment which will begin to counteract the progress of the disease in his patient's system. The prima facia remedy is *Anti-toxin* which has been in universal use for the past eight to ten years, and is now looked upon and regarded as a specific. There are several reliable preparations and a marked improvement in its quality: that is, they have made the anti-toxin more concentrated, and the same effects may be obtained with much less bulk than formerly.

It is not definitely known how it acts in the system. One theory is, that its action is purely chemical, neutralizing the diphtheria toxins present in the blood, and another theory is that it increases the resisting power of the cells of the body to the diphtheria toxins. Whichever theory is correct we do not care much, but this fact we do know, that it acts like magic and we see results in twelve to twenty-four hours, both locally and constitutionally. The local condition if watched, shows a cessation of formation of membrane and its retrogression. The discharges lessen and swelling diminishes, membrane begins to loosen and fall off, and breathing from the stenosis is relieved. The constitutional effect is as marked as the local improvement. Usually the temperature falls: the pulse improves, and circulation is better, the mind is clearer and the patient is better in every way.

The injections of anti-toxin may be made upon any part of the body since the concentrated serum has been adopted. The abdomen, thighs or back may be preferred, and the parts subsequently prepared by thorough cleasing with soap and water, and the operator having cleaned his hands with soap and water, one of the bottles or tubes containing the anti-toxin is prepared. It was customary to use a large hypodermic syringe, but now the manufacturers send the anti-toxin with special attachments, which when put together, give the physicians a very aseptic method of using the serum.

After all the preparations are ready, the portion of the skin over the part selected for injection is picked up, and with the other hand, the needle is inserted underneath the skin, and the contents are forced out of the container into the tissues, and the needle withdrawn, and the puncture sealed and some sterilized material and collodian. Some slight pain, redness and oedema may be seen at the site of the injection, and a general eruption develops (in some cases) over the skin about the tenth day after the injection and may resemble an urticaria, but is only transient and gives no trouble, passing away in a few days. It has been said that temporary albumineria and swelling of the joints have been noticed after immunizing doses of anti-toxin, but I have not noticed these symptoms in my practise.

Now in regard to the dose of anti-toxin in diphtheria, I am of the opinion, and have come to the conclusion that large doses are harmless, and should be administered as soon as the earliest opportunity presents itself. Even in children of tender years, and mild cases, should receive 2,000 units, which should be repeated in twelve to twenty-four hours if there are no signs of improvement. If very large doses are given early, it is seldom necessary to repeat. In severe cases of either pharangeal or laryngeal diphtheria 3,000 to 4,000 units should be administered at the first visit; and this is especially so in the laryngeal type, which is very apt to produce death in a few hours, if assistance is delayed. The mortality rate of this type was formerly 90 to 95 per cent., but with the aid of intubation and tracheotomy it was reduced to 72 to 76 per cent., but since the use of the immediate injection of anti-toxin, it has fallen to 25 per cent., and if we leave out those deaths that occur inside of twenty-four hours, to about 10 per cent., anti-toxin should always be administered as early as possible and more especially in laryngeal cases, without waiting for a bacterological examination. Coupling the danger of delay with the harmless nature of the anti-toxin, it is quite plain that anti-toxin should be given in every case where the diagnosis of diphtheria is probable, for of all the reported cases of sudden death and aggrevation of cardiac and renal disease or other unfavorable influences were accepted as proved, they could not for a moment be weighed against the accummulating evidence of the curvative effect of anti-toxin in diphtheria.

In regard to general measures, the patient should be placed in a room well lighted and ventilated, and at a moderate temperature, and all furniture removed from the room, and placed in bed and made as comfortable as possible, and whatever handling or interference is required, should be so arranged as to tax the patient as little as possible, especially in cardiac complications and all treatment that tends to excite the child or cause it to struggle, avoided. Attention to feeding the patient is important to enable them to bear the attack of the disease upon the vital powers. Milk, beef juice, beef tea, or thin gruels should be given at regular intervals. Nursing children should be fed with milk drawn by the breast pump, and saved the exertion by sucking, and so protect the mother from the danger of infection. In septic cases where food is refused or cannot be retained on stomach they may be fed by the stomach pump, rectal feeding in grown-up children and adults with peptonized milk might be used. Steam medicated inhalations have long been adopted to increase the secretions and soften the diphtheritic deposits and hasten their separation, but so far as having any influence over the disease, it is doubtful. In many cases it may be necessary to resort to some local treatment, and the object sought in such treatment has changed in recent years. Experience has shown that we cannot by this means get rid of the membrane and destroy the bacteria, but we endeavor simply to keep the nose, mouth and throat clear of secretions which may either obstruct them, or by decomposition and absorption increase the toxaemia. To assist their removal, normal salt solution or saturated boric bacteria have disappeared from the throat. A well-trained nurse should be syringe with a suitable end piece. The luke-warm solution is allowed to enter one nares and pass out the other and through the mouth, and by so doing, the loose secretions and mucous and bits of membrane are washed away, and this is kept up at regular intervals according to the case until all bacteria have diappeared from the throat. A well-trained nurse should be able to carry out this treatment and with very little tax upon the strength of the patient. In general treatment with the advent of anti-toxin, most of the remedies for diphtheria have passed from use. The tinct, ferri. chlor.

diluted with water and glycerine is still used by some for pharyngeal and tonsillar cases. In laryngeal cases, the best results previous to the use of anti-toxin was obtained from mercurial preparations in the form of bi-chlorid and calomel with calomel fumigations. The bi-chlorid was given in often repeated doses, and the fumigations were given by placing calomel under a tent or canopy and volatilized every two hours for two or three days, then less often.

Stimulants are without doubt a most useful requisite to anti-toxin, viz.: alcohol and strychnine. In all severe cases where there is much depression from the toxaemia or general weakness of its system fro mheart failure, alcohol and strychnine. In all severe cases where there is much depression alcohol and strychnine should be resorted to tide the patient over the general depression if possible. Any complication arising should be treated and when extreme cases of laryngeal stenosis either from extension of disease .from pharynx or so-called membranous croup, which is now looked upon as one, and the same thing, and the patient's life is in jeopardy as shown by the patient's breathing, circulation and restlessness, it becomes necessary if friends give their consent to perform intubation or thracheotomy. The former operation is almost out of the question as few if any physicians have the necessary intubation set, and if it becomes necessary to have to send for a set or an operator to introduce the intubation tube, valuable time has been lost and patient may have succumbed before that aid has arrived. On the other hand we also have a difficult problem before us, and that is as a last resource, viz.: thracheotomy. The mortality is so great that few physicians would risk their skill in performing an operation which affords so little hope as that of opening the windpipe. No remedy has done so much for the human race as that of anti-diphtheria serum, excepting perhaps vaccine, which has brought so much happiness and lessened the risks that patients have submitted to by either intubation or thracheotomy.

Our duty as physicians is not completed by attention to those with diphtheria alone, for we find that it is our duty to advise and take preventative measures for the safety of the others in the home. After placing the affected person or persons in isolation, and attention to the rooms or apartments where they are placed, it is necessary to see that the rest of the household are forbidden to enter those apartments so isolated, and that an attendant or nurse who is placed in charge of the patients, is not allowed to mingle with the rest of the family. The nurse should especially avoid contracting the disease by exposing herself to the discharges from the nose or throat of the patient, and should see that all discharges are collected in cloths for the purpose and then burned, and all expectorations in cups and etc. should be disinfected in carbolic or bi-chloride solutions. All eating utensils should be sterilized, and nothing in fact should be taken from the room unless put through a process of disinfection. The nurse and all those who have associated with the patient should be given an immunizing dose of anti-toxin which will protect them from contracting the disease for a period of three to four weeks, said dose to consist of about 1,000 units. The house itself should be put under strict quarantine, and no member of same allowed to leave it for the alloted time of quarantine.

A Study of Mechanical Filtration of Water.

DR. W. T. CONNELL, Kingston.

In the fall of 1902 and during the winter of 1902-3 a small number (8) of cases of Typhoid Fever, occurred among the cadets of the Royal Military College. The cases in the fall occurred at a time when practically no cases were present in the city itself, while in the winter there was a considerable epidemic in the city and it is altogether probable that those cadets who were attacked then, were infected from the city water supply. The College is situated on Point Frederick on the east side of the harbor and opposite to the city proper and has a separate water supply which is pumped from Navy Bay. The drains from the College grounds and buildings lead to the harbor side of the Point. The water pipe extends out into Navy Bay some 150 feet from shore and runs somewhat up stream. The situation can readily be seen in the accompanying map. This water pipe was examined and it was found that there was a break in it some 20 or 30 feet off shore, in fact just off end of the pump house dock. During the summer of 1902 and in fact late into the autumn workmen were engaged in building a gymnasium, etc., along the shores of the bay and close to the Pump House. Their closets were situated on shore itself so that we have here a possible mode of specific pollution of water as some one of the workmen may have been harboring typhoid bacilli.

When the first cases were detected at the College a strict examination was at once instituted to learn the source of infection. Bacteriological analyses of water supplies were made which showed the water to be contaminated with sewage matter. The details of the analysis will be found in Table 1. Examination of the water pipe as I have before remarked showed too a distinct break a few feet off shore.

After the analyses were made all water used at College was boiled and as this is a military institution there is no doubt that this boiling was thoroughly carried out. For this reason I think we can ascribe the few cases later in the winter to probable infection from city water supplies which were afterwards shown to be grossly polluted.

The precaution of boiling the water has been taken till very recently, in fact till after repeated tests of the water furnished by the newly installed

TABLE I.

Bacteriological Analysis—Water from Royal Military College.

Date.	Source of Sample.	Number of Bacteria per 1 cc.	B. Coli.	Stepto-cocci.	Staphyl-ococci.	Remarks.
1902						
Nov. 17.....	Pump House.	500		—	—	
Nov. 20.....	Surface lake at Intake pipe	110		—	—	
Nov. 25.....	Water taken at intake mouth	48		—	—	Taken by diver.
Nov. 27.....	Water taken at point of break near shore	2.165		+	+ Also Proteus.	Taken by diver.

mechanical filters showed that these filters were working efficiently in purifying the water and could be said to furnish water reasonably safe from danger of carrying waterborne infections.

After the installation of the filters at the College tests were made to test their efficiency. The water to be filtered continued to be pumped from the broken pipe. As can be seen from Table 2 the filters acted at first very erratically and not at all successfully. Under the direction of Capt. Cochrane (Prof. of Chemistry) varying amounts of alum were added to the water. After repeated trials and much discouragement it was found that an addition of an average of 2 to 2½ grains per gallon was about the proper working quantity with the water to be filtered. Tests made after this amount was being used have shown very good results indeed as can be seen from an examination of Table 3.

The difference made in the physical characters of the water have been very marked from the first even when the filters were not bacteriologically efficient. The unfiltered water (coming as much of it did through a break in pipe on mud bottom) contained considerable sediment consisting of sand grains, diatoms and various minute animal forms. The filtered water is

TABLE II.

Royal Military College.

Bacteriological Analyses—Filtered and Unfiltered Water (Test Period).

Date.	Source.	Number Bacteria per 1 cc.	B. Coli.	Stepto-ococci.	Staphyl-cocci.	Remarks.
1903						
Oct. 12	Filtered	125		—	—	Water clear sparkling, free from sediment.
Oct. 12	Unfiltered	82		—	—	Water contains many diatonis, etc.
Oct. 23	Filtered	216			—	Filters washed 2 days previous.
Oct. 23	Unfiltered	450		—	—	
Oct. 24	Filtered	190			—	Filters washed 3 hours previous.
Oct. 24	Unfiltered	250		—	—	
Oct. 31	Filtered	100	—	—	—	Filters washed 3 hours previous.
Oct. 31	Unfiltered	210		—	—	
Nov. 7	Filtered	42	—	—	—	Filters washed 2 days previous.
Nov. 7	do.	170		—	—	Taken just after filters washed.
Nov. 7	do.	214	—	—	—	Taken 3 hours after filters washed.
Nov. 7	Unfiltered	278		—	—	
Nov. 8	Filtered	300		—	—	Filters washed 1 day before.
Nov. 9	do.	300		—	—	Filters washed 2 days before.
Nov. 9	Unfiltered	406		—	—	
Nov. 17	Filtered	60	—	—	—	
Nov. 18	do.	160		—	—	
Nov. 19	do.	186		—	—	
Nov. 20	do.	48	—	—	—	
Nov. 21	do.	80		—	—	
Nov. 21	Unfiltered	130		—	—	
Nov. 27	Filtered	84			—	
Dec. 2	do.	51		—	—	
Dec. 4	do.	65		—	—	
Dec. 4	Unfiltered	114		—	—	
Dec. 5	Filtered	67		—	—	
Dec. 5	Unfiltered	240		—	—	
Dec. 12	Filtered	34	—	—	—	2½ grs. alum per gal.
Dec. 14	do.	48	—	—	—	2½ grs. alum per gal.
Dec. 14	Unfiltered	120		—	—	
Dec. 16	Filtered	30	—	—	—	2½ grs. alum per gal.
Dec. 16	do.	60		—	—	1½ grs. alum per gal.
Dec. 16	Unfiltered	156		—	—	
Dec. 18	Filtered	30	—	—	—	2½ grs. alum per gal.

N.B.—While filtered water in this series of tests is practically invariably better than unfiltered, yet B. Coli types persist in passing through filters. In later tests of this series the conclusion was arrived at that 2 to 2½ grs. of alum per gal. was proper amount to be used to secure even results. This amount was employed in series of Table III.

TABLE III.

Bacteriological analyses water, Royal Military College (January to June, 1904).

Date.	Source.	Number Bacteria per 1 cc.	B. Coli.	Strepto-cocci.	Remarks. N.B.—2 to 2½ grs. alum per gal. used in filtration.
1904					
Jan. 30	Filtered	24	—	—	Filter washed in morning.
Jan. 30	Unfiltered	86		—	
Feb. 13	Filtered	22	—	—	" " "
Feb. 13	Unfiltered	160		—	
Feb. 27	Filtered	44	—	—	" " "
Mar. 12	do.	108	—	—	" " "
Mar. 26	do.	44	—	—	" " "
Mar. 26	Unfiltered	686			Ice softening and breaking up.
April 11	Filtered	96	—	—	Filters washed 2 days previous.
April 11	Unfiltered	814		—	
April 23	Filtered	108	—	—	Filters washed in morning.
May 7	do.	42	—	—	1 B. coli found in 5 cc. water.
May 7	Unfiltered	280		—	
May 21	Filtered	36	—	—	Filter washed in morning.
June 6	do.	36	—	—	Filter washed 2 days before.
June 6	Unfiltered	120		—	
June 26	Filtered	32	—	—	Filter washed 3 days before.
June 26	Unfiltered	180		—	

clear, sparkling, throws down no sediment and only occasionally can any minute animal forms be found in it.

These mechanical filters were installed in the latter part of the summer of 1903 and are the Jewell pattern. Two filtered cylinders were put in use. As I believe that mechanical filters are not extensively known to us in Ontario I may be pardoned for giving a short description of them and their method of action. I am led to do this as no detailed reference to them will be found even in most recent books on Sanitary Science. No doubt those acquainted with Municipal Engineering work will know all about them.

The filters installed consist of iron cylinders about 6 feet high and 6 feet in diameter. These are filled about 2-3 full of moderately coarse sand. To the water to be filtered is added by an automatic feeding arrangement a certain amount of alum per gallon. The water is filtered through under pressure so that it moves from 50 to 100 times faster than in an ordinary open sand bed filter.

These mechanical filters, apart from rate of filtration, differ from the ordinary sand filters in the following particulars:—

1st. In ordinary sand bed filtration, the filtering layer is formed by the bacterial layer or vital layer which forms in the upper layers of sand; in the mechanical filter the filtering layer is formed by the formation of a film on the sand surface through the action of the alum on the dissolved calcic carbonate in the water throwing down aluminum hydroxide, calcic sulphate, etc. To this is soon added of course more or fewer bacteria.

2nd. The mechanical filter soon gets clogged by the film and all the sand in cylinder must be washed as well as film removed, while in the sand bed raking of the surface only need be done and that at intervals of two or three weeks.

As to comparative efficiency of the two I am not able to judge except from acquaintance with literature of the subject. From this I would say that when both are properly worked they are perhaps equally efficient. The mechanical filters are no doubt the most expensive to work but in our winter climate I believe the sand bed filters are not workable.

Any filtering plant will require careful supervision and should be tested at frequent intervals. Plants for supply of a large city should be tested

daily, while for smaller places at least once a week is none too often. The College plant was tested only every fortnight but as it was under the supervision of Capt. Cochrane, Prof. of Chemistry at the Military College, any defects would have been at once recognized. I may say that the College has been exceptionally free from Enteric disorders this winter but as water has been boiled till last two months the plant cannot yet be considered as having finally proved itself in this respect. (I may add that a new intake pipe is now in position and will no doubt soon be connected so that a purer water supply for filtration will in future be available.)

The Public Health Aspects of European Immigration to Canada.

P. H. BRYCE, M.A., M.D., Medical Inspector Department of Interior, Ottawa.

Mr. Chairman and Gentlemen of the Association:

If I were not speaking in the presence of many old and tried friends I would hesitate to attempt to deal with a subject, conclusions concerning which can only be confirmed by time and the outcome of the various influences which can effectively operate only through time. Nevertheless as we learn mainly from experience and as history is comprehended not only by the ascertaining of facts, but yet more by the influences, religious, social, physical and political underlying the facts, it appears to me that we have in the settlement of Canada during the past hundred and odd years and in that of the United States a large accumulation of facts from which we may fairly draw some conclusions regarding the effects which the present rapid ingress of very many thousands of immigrants is producing, and if it continues will produce upon the public health of the people of Canada. I may first very properly set forth, as we find them in the Reports of the Department of the Interior, the statistical facts regarding the extent, character and distribution of this immigration at the present time:—

Table showing Immigration to Canada by years and Nationalities:—

English and Welsh	9,393	9,475	8,576	8,184	35,639	9,401	13,095	32,510	36,694
Scotch	1,239	1,400	1,337	1,411	5,387	1,476	2,853	7,046	10,552
Irish	751	733	747	765	2,948	933	1,311	2,236	3,128
Galicians	3,917	4,010	6,700	6,593	21,326	4,702	6,550	10,141	7,729
Germans	636	563	780	705	2,691	984	1,048	1,887	2,985
Hungarians	540	740	276	530	806	546	1,048	2,156	1,207
Austrians			131	248	1,389	228	320	798	2,201
Scandinavians	718	724	1,526	2,380	5,638	1,750	2,451	5,448	4,203
Doukhobors			7,350		7,350				4
French and Belgians	740	545	413	483	2,181	492	654	1,240	2,392
Russians and Finlanders			735	2,067	3,603	1,726	3,759	7,217	2,806
United States	712	9,119	11,945	15,500	37,276	17,987	26,388	49,473	45,170
Miscellaneous	1,370	3,703	4,027	5,831	15,027	8,924	7,902	8,152	11,258
Total	20,016	30,742	44,543	44,697	141,261	49,149	67,379	128,364	130,429

The distribution and occupation of these 130,000 who arrived in Canada in the fiscal year ending June 30, 1904, may be judged from that of 1902-3 during which 31,383 entries of free grant lands were made, which at the ordinary 160 acres per grant, means that 3,326,598 acres were occupied. But in addition to this number lands were sold in Manitoba and the North West Territories amounting in all to 9,387,561 acres, or a half more than were occupied in old Ontario in 1861, when the population was nearly 1,500,000.

Of the homestead entries 11,841 were grants to immigrants from the United States.

While I have not been able to obtain any exact figures with regard to the occupation of these immigrants, yet the facts given show that they are principally agriculturists, though there is necessarily always a good number of day laborers, without any special knowledge of agriculture, but who in the west must in large numbers go to the farming districts. Except the artizan class, which are mostly English and Jewish, from English and continental towns, it may be said that almost all of this immigration is essentially agricultural in its tendency and that only such of these will be attracted to the towns and cities as may be required in the several growing industries. Referring to internal movements of population in Canada, I find that at the Winnipeg Immigration Agency there are returns of some 11,591 persons, hailing from Ontario, and that in 1900 there were 1,819 homestead entries to such persons in a total of 7,850 entries. This number since 1900 has certainly not grown less, and if we add to this the large number who have entered the west and have not travelled at immigrants rates, it is apparent that a very notable admixture of old Canadians with the new elements of the west is constantly going on.

From these statistics it is apparent that action and reaction of the native and foreign elements of this new population on each other must be rapid and continuous and such further becomes of extreme interest in estimating its outcome upon the public health of present and future settlements in the west and north of Canada.

In order, however, in any degree, to estimate these influences we must enter more into their details. It must be apparent to all that when a British community in any part of the world takes up the problem of filling its unoccupied lands with settlers it most naturally looks to older Britain for its supply in preference to any foreign country. Such a colony is assured of receiving a people possessed of the same ideals, religious, social and political; and we of Canada are hence constantly endeavouring to cultivate such an immigration. To what extent England has been a colonizer during the past century may be estimated from the following figures:

Population of Ontario by Census Periods.

Year.	Population.	Year.	Population.
1840	427,441	1871	1,620,851
1848	723,322	1881	1,928,228
1851	952,004	1891	2,114,321
1861	1,396,091	1901	2,184,144

The following table gives the population in the United States and increase in each census period of the nineteenth century.

Year.	Population.	Increase since previous census.	
		Amount.	Per cent.
	Millions.	Millions.	
1800	5.3	....	....
1810	7.2	1.9	36
1820	9.6	2.4	33
1830	12.9	3.3	34
1840	17.1	4.2	33
1850	23.2	6.1	36
1860	31.4	8.2	36
1870	38.5	7.1	23
1880	50.1	11.6	30
1890	62.6	12.5	25
1900	*75.7	13.1	21

The percentage rate of increase of the immigration in each period is of great interest and is of further interest, when set alongside the percentage increase of Great Britain and the loss of emigrants to the United States.

Population of England by Census Periods, Showing Rate of Increase.

Year.	Population in millions.	Increase per cent.	Year.	Population in millions.	Increase per cent.
1800	8.9	....	1860	20.1	11.9
1810	10.2	14.0	1870	22.7	13.2
1820	12.0	18.0	1880	26.0	14.4
1830	13.9	15.8	1890	29.0	11.6
1840	15.9	14.5	1900	32.9	12.2
1850	17.9	12.9			

By an examination of these two tables it is made plain that while up to 1820 the increase in the United States had not been remarkable, yet the decade ending in 1830 showed a notable increase, which reached a climax in 1860. Similarly a comparison in the British rate of population increase for the decades 1840-50 and 1850-60 shows a decline of 3 per cent. in the natural increase, or a loss due to immigration to the United States, Canada and Australia in excess of previous decades of over 1,000,000.

To what extent England has been a colonizer may be estimated from the fact that though there has been a very large immigration to England from the continent in recent decades, and while her town population has risen relatively to that in rural districts to 77 per cent. of the total, yet she actually would have had, could she have retained her natural increase at home a population of nearly 40,000,000.

This table may very properly be supplemented by another table showing the actual emigration from the United Kingdom during a series of years.

Emigration from Great Britain and Ireland 1815-1900.

Year.	England.	Scotland.	Ireland.	Total.	Per annum.
1815-1834	110,000	30,000	420,000	560,000	28,000
1835-1850	320,000	80,000	1,420,000	1,809,000	113,000
1851-1860	640,000	183,000	1,231,000	2,054,000	205,000
1861-1870	650,000	148,000	818,000	1,578,000	157,000
1871-1880	970,000	166,000	542,000	1,678,000	168,500
1881-1890	1,588,009	274,000	677,000	2,556,000	255,000
1891-1900	1,095,891	185,982	460,917	1,742,790	174,000
1901	111,585	20,920	39,210		171,715
1902	137,121	26,785	42,256		205,664
1903	177,581	36,801	45,568		259,950

Grand total, 1853-1903 (inclusive)	5,101,295 980,346 3,420,442	
1853-1903		9,502,083
1815 to 1852		2,142,000
		11,644,083

Owing mostly to the emigration between 1840-60 from Great Britain it is interesting to note that the Province of Upper Canada (Ontario) increased from 450,000 to nearly 1,400,000, though the natural increase was not probably more than 30 per cent. or 135,000. The decrease during the successive decades of this marvellous immigration is quite as notable. The fact seems

to be that by 1860 the available arable lands of Canada as it then existed had become practically all occupied; there was nothing remaining except the rocky lands of the Laurentide area of Northern Canada, and these had no railroads into them, while Manitoba and the Territories had not yet been acquired. In the meantime the railroad of Ontario had reached and passed the American border, and the young men of Ontario in a population increasing some 20,000 per year, required only to board the train, and, arriving in some western State, take up their free grant or railway land, and soon sending word of his success home have his friends follow. This process was inevitable, since the urban population of Ontario in 1861 was but 17 per cent. of the total and but few manufactures had then been established. The development of such, indeed was limited until an increase in our rural population took place. It is apparent that the enormous influx of population into the United States and Canada and its distribution became possible only with the railroads, whose construction dates from 1850 and which made the transportation of the products of the field to the sea-board possible. How rapid such development became may be judged from the fact that, while in 1840 with a population of 450,000 Lord Durham reports Upper Canada as having but £60,000 of a revenue, the census of 1861 gives her a revenue of over £10,000,000. In Canada, to some extent, but in the United States to an enormous extent, followed the opportunity and, indeed, the necessity for supplying these millions of agriculturists with manufactured products. Through the triumphs of science, in engineering, chemistry, mining, and the inventions for increasing the output of their products, which had made England for 50 years the world's producer, her children on the western continent began to imitate her in establishing manufacturing industries. However in manufacturing States the urban rate of increase has been almost as great as in England, the urban population being in Ontario 48 per cent. and in States like Massachusetts and New Jersey as high as 80 per cent. and 65 per cent. respectively of the total. Thus we witness in the mother country and in her two great American colonies, the evolution of ever increasing populations, and can in some degree estimate the results of certain definite conditions.

At the outset we must guard against the too general and broad generalization that in urban populations there necessarily must follow in a public health sense a degeneration both physical and moral of the citizens.

The history of England from 1800 to the period of the great social reforms, 1840-60, is enough to prove that a country, with a relatively small urban population yet without sanitary regulations, laws against child labor, factory laws as regards certain trades, etc., may have a mortality much greater than the same country governed under laws the outcome of modern science and humanitarianism.

But while this is true there does, nevertheless, remain, as shown by both inference and actual statistics, very notable differences between children brought up in rural districts and the airing outdoor pursuits and those from factory towns and indoor occupations. Apropos of the great increase of urban population an Imperial Army officer, writing regarding the inferior physique of the people, says:—"If the standard of examining recruits for the army were adopted, which existed in the eighties, 70 per cent would be rejected. Since April, 1899, the unfit rejected was 113,000 out of 365,000, while in addition 10,000 recruits were invalided within two years of enlistment.

There is, however, in addition to the fact that the urban population of Great Britain has enormously increased within fifty years, as on the continent and in the United States, the further fact that the very large influx of for-

eigners from the continent of Europe into England has located almost wholly in the cities. This may be gathered from the following table:

Table showing aliens landing in part of the United Kingdom in the years 1894-1903.

Year.	Aliens en route to other countries.	Aliens not described as en route to other countries.	Year.	Aliens en route to other countries.	Aliens not described as en route to other countries.
1894	37,678	36,337	1899	52,836	61,357
1895	46,711	38,348	1900	75,654	73,483
1896	42,997	43,918	1901	83,019	66,731
1897	34,897	46,937	1902	89,516	73,550
1898	34,513	50,748	1903	134,330	72,861

This latter finds its complement in the succeeding one which gives the nationalities of those aliens arriving from the continent during the same years:

Table giving Aliens settling in Great Britain by Nationalities.

Year.	1890.	1891.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.
Russians and Poles	7,482	10,204	12,773	14,775	15,248	20,266	25,633	29,914	28,511	30,046
Norwegians, Swedes and Danes	4,174	3,700	4,437	4,617	4,775	5,695	5,796	4,725	5,028	4,702
Germans	6,229	5,665	5,557	5,496	5,886	5,926	5,799	6,730	6,965	7,502
Dutch	1,138	1,281	1,517	1,468	1,820	2,105	2,171	2,199	2,456	3,761
French	4,077	3,849	3,948	4,477	4,367	4,861	4,821	5,816	6,637	6,495
Austrians and Hungarians	911	865	1,246	1,306	1,941	2,548	3,074	2,342	3,144	4,005
Italians	2,452	2,738	3,448	4,061	4,224	5,553	7,707	7,185	7,734	7,045
Roumanians	2,219	2,226	2,522	2,651	2,524	3,930	3,216	1,162	1,282	565
Other Nationalities	.....	.....	.....	.....	.....	.....	4,288	4,351	4,714	5,047
Total	28,862	30,528	35,448	38,851	40,785	50,884	62,505	55,464	66,471	69,168

Not more remarkable is this enormous immigration of peoples from continental Europe, increasing in both groups from 74,000 in 1894 to 207,000 in 1903, than is the country of the emigrant. While the increase was 2.7 in the 10 years, the Russians and Poles, in large measure Hebrews, remaining in England increased over four times, while the total Hebrews who landed in New York in 1903, were 76,623, being a notable proportion of the 134,330, sailing from British ports in the same year—Canada received 3,727 of the same class during the last year. This class of immigrants whether to England or America, as remarked by United States officers, "ranks below all other immigrants and few seem capable of hard physical labour. They cling tenaciously to life in the slums and their sweat-shop conditions.

We thus are brought face to face with the fact that the British immigrants we are so assidiously cultivating must in large measure be urban in its character, and always contain a certain number of the poorer classes from continental cities. Hence the occupation of the British immigrant and the district of Canada to which he goes must become of much importance in estimating the effects of any such large emigrations on the population of Canada. It is of interest to note that in actual results the class which enters year by year and even month by month and ship by ship, varies greatly in character as illustrated by the table showing the increase in British immigrants. This naturally follows as the result of the many and varied influences operating on the people over the wide areas of Britain and the Continent; and to one who standing at a gateway of Canada, as Quebec or

Halifax, watches the thousands almost daily flowing through from these many converging streams, the problem we are discussing becomes surrounded with an intense interest, since its solution, must in its very nature be most difficult though no less pressing and necessary. It hardly need be said that all the official agencies of Canada in operation in Britain or elsewhere are to the end of encouraging only such immigrants as are likely to become producers of raw materials, in other words farmers and farm laborers. As regards British immigration it is apparent that with less than 25 per cent. of the population rural, it is not reasonable to suppose that he demands of he great areas of Canada, demanding development, can be satisfied by the agriculturists of Britain. There is, however, another fact intimately associated with this, viz., that, especially in periods of industrial depression, many persons trained in trades or in factories will seek work in Canada or elsewhere, primarily at their previous occupations, but if no opening in such be found, then perforce as agricultural laborers or farmers. Taking the present year, as an average one, with no marked industrial depression in Britain what do we find? I have had the opportunity during the past months of personally inspecting and making inquiries of many thousands at the ports; and have heard from their lips, and have obtained from the actual manifests of working agents, the statements showing that the great bulk of the present immigration is toward our agricultural lands, especially in the North-West.

Occupations of Immigrants destined for Canada, arriving at Canadian Seaports (Fiscal Year) 1902—1903.

Part of July.	Agriculturists.	General Laborers.	Mechanics.	Clerks and Traders.	Miners.	Female Servants.	Not Classified.	Total.
Quebec	4,846	11,574	4,177	1 281	517	1,199	14,474	38,068
Halifax	348	1,957	145	8,1	17	427	1,498	5,573
St. John	1,978	2,227	1,450	417	103	47	4,509	10,731
	1,234	921	59	42	134	479	1,472	4,341
Montreal	39	637	32	112	61	14	1,344	2,139
Total	8,245	18,416	5,863	1,833	929	2,166	33,297	60,852
1903-4 .	30,278	19,354	[illegible]	3,530	3,493	3,504	10,285	85,159
Winnipeg	51,736	8,122	3,974	2,662	970	[illegible]	42,380	110,570

This table includes the returns made by the commissioner at Winnipeg, which, in addition to those going west and who have entered Canada by the ocean ports, includes those who have entered via border ports into Manitoba and the North-West. It becomes at once apparent that the occupation given by the great bulk of those at ocean ports, is that of "general laborers" and others, including many females, unclassified. Clearly there must be added to the agriculturists from the United States, who entered via Winnipeg and other ports many others, who reaching there as laborers, go on farms and are registered as agiculturists. Quite a large number, more of this same class who enter Ontario go to the farms where they properly may be classed as agriculturists.

It may be stated that the immigration of 1904 has been distinctly more agricultural than of any previous recent year.

From personal observation, and even more from those of the agent of the Port of Quebec, who has held the position some 35 years, I would conclude that the character of the present British immigration is superior to what it has been for many years. The reasons therefor are two-fold: First, because all the advertising efforts of the Department of the Interior have

been devoted to encouraging agriculturists; and, second, because the measures of inspection at British ports by Board of Trade officers and those of the shipping companies, and still more those instituted at Canadian ports, are such as to discourage the entrance of unfit persons, whether due to physical, mental or moral causes.

Thus the total immigrants arriving at Quebec in May and June of the present year were 27,400, and of these there were detained for treatment or deportation 325. In nearly every instance these detentions have been of persons from the continent suffering from ophthalmia, either chronic or acute; but here and there defections of various degrees and due to various causes, are detained. Of course it is not to be expected that all who have been admitted to Canada will be found free from disease, that there will not be some who are too old to undertake the task successfully of establishing a home in a new country or that no epileptics, consumptives or low degenerate will find an entrance, to be discovered later on; but it is fair to say that excepting the occasional young man, well-dressed, and often well-educated, who in the routine inspection is not likely to be detected and yet proves subsequently to be a physical and moral degenerate, few indeed will be found undesirable who have found admission.

The pampered young man who has never learned what honest endeavor means, the misfits due to some idiosyncrasy, there always will be—and in what country, even a young country, do such not exist; but when we find, from all causes, that of the 128,364 entering Canada June 1902-1903, there were but 267 deported and that most of these were foreigners suffering from trachoma, or others who had subsequently suffered from acute disease, and who had not been able to make a living, it must be apparent that the immigrants who have been coming into Canada are remarkably free from those qualities which mark the degenerate.

And now what must be said regarding the type of immigrants coming to Canada from Continental Europe.

In the year ending June 30, 1904, there were of the Sclavic races 8,936 Galicians and Hungarians and 2,806 Russians, Poles and Finlanders; of the Teutonic races, 2,985 Germans, 4,203 Scandinavians and 2,201 Austrians; French and Belgians, 2,392; with 11,258 including such as Italians, Syrians, Greeks, or 34,781 in all.

It must not be overlooked that of those set down as Russians and Poles, 2,393 were Hebrews from those countries, or that there were 602 Austrian and 52 German Hebrews.

These figures when analyzed become of special interest, since they introduce a phase of the immigration problem of the greatest possible political, social, moral and economic importance.

It will be noticed that the greater number of these foreigners is Sclavic in origin, under the heading Galacians, Russians, Buckooinians, Poles, and Roumanians, with a very considerable number of Teutonic, largely Scandinavian, and some French, the Miscellaneous, including Italians, Syrians, Greeks. Such with the peoples of our own Provinces and the neighboring States, are they who going into the new lands, notably of our North-West, must under the absorptive and assimilative powers of our language, government and social customs be transmuted into citizens of Canada.

This somewhat long list will be a surprise to most of us, whose homes have always been in Ontario, and who, therefore naturally have not in any practical way had to consider the matter; but when it is stated that in Winnipeg there are citizens speaking some one of 40 tongues as their native

language, it is evident that the problem as already posited is no ordinary one.

I shall refer briefly to its several factors. Speaking generally, we may say that, given an agricultural people we expect to find a people of good physique. This to a remarkable extent is a fact as regards these Sclavic peoples (now Jews) and the Scandinavians, who as noted in the figures, form the larger half of the present Continental immigration.

Speaking from personal observation of those brought last year and this by the several steamship lines, I am not wrong in saying that of a similar number from no other country have I found more, or perhaps as many persons, whether men, women or children, of relatively perfect physique as among the Galacians and Buckooingians. Let me indicate who they are. During the centuries, long gone by of the Sclavine movement, the mountanous regions of Eastern Austria and South-Western Russia and the adjoining territories were overrun by these peoples, who settled there permanently and developed a feudal society as elsewhere in Europe with essentially its two classes, over-lords and their retainers, each with a few acres as an allotment, for which he paid a rental. Such continued into the present century, the serf becoming relatively a free man but subject as elsewhere to the over-lord, yet free to receive a fair education and become a citizen of the state, subject to compulsory military service. Probably in no great degree were such peasantry, in any way inferior to that of England up to the last 50 years. They lived in their village communities, going out to their small farms often remaining there during the week, the men asssisted by the women and children. Many doubtless were mere laborers, but in the main those coming to Canada have been small proprietors, or at any rate tenants. It is evident that with their small holdings, and hilly country, the women and children would have to work alongside the men, to make the necessary, even though small, income. They spin their own flax and dress often in sheep-skins prepared with their own hands. Arriving in Canada they present to the casual observer a grotesque, and to some even repulsive, appearance; but this is essentially but skin deep. Watch them with their respectful military carriage, approach the medical inspector and stand at attention! Serious, solemn but not sullen they calmly await their fate. But, excepting the occasional case of ophthalmia, partly induced by overcrowding on train and ship-board during a voyage of at times four weeks, and the old man and wife of a large family, who have sold their all and have emigrated *en masse* to this western Land of Promise, the men, women and children are usually superb specimens, physically considered. The men are stocky, 5 ft. 6 in. to 5 ft. 10 in. in height, and have a remarkable chest development, due perhaps to their life in a hilly country and in part to their military service. The women, like the early British colonists of Ontario, with their bands of sturdy children, are women in the highest physical sense. With faces marked with a patient endurance, at times truly pathetic, yet often lighted up with a smile of maternal pride and hope, they present hundreds of instances where the artist might well select not alone a *mater dolorosa* but a *mater sanctissima.*

Now we ask what will be the future of such in Canada? The ten years, since the first band arrived uncouth, uncared for, frowned upon and neglected, have told the story of their sturdy endurance, their patient industry, and their general probity. To-day they are being cultivated by the trader, the politician reckons upon them as a future political factor and even the church thinks it possible that they have souls worth looking after. It is true they were poor in ready cash; but when it is remembered that it takes from $500 to $1,000 to transport single large families from their Austrian

homes to the North-West, it will appear a matter of no little importance as indicating their thrift that a peasant of any country could find that amount of money, necessary to transport him 8,000 miles to a new home. From all directions comes their story! They verily sank out of sight into the soil of the western prairie and with *resurgam*! on their lips have reappeared in ten years with fields of grain and flocks and herds, while speaking the tongue, adopting the manners and obeying the laws of their adopted country. Already some 100,000 have found homes in the great North-West and we may feel assured that should others of their race come to the country they will similarly prove themselves worthy of their opportunities.

To these British and Continental immigrants we must add probably another 100,000 of repatriated Canadian-Americans, others of foreign extraction who in the United States have learned to respect Anglo-Saxon institutions and something of the ideals of that race whose history is the conquest of new lands and the establishment of representative governments. As regards the influence of such upon the public health of our country, can there be any doubt? If there were any reasonable fears under the conditions peculiar to isolated communities we may be sure that, with the continually increasing number of British people and emigrants from old Canada settling amongst or near them, any such untoward results can not occur.

There is, however, a class referred to as miscellaneous, which were it large in numbers might and should give us cause for serious thought. Such includes persons from the cities, not alone of Southern Europe, but the great centres of population in the cities of the north. Every ship brings some whose destination is our several large cities, Montreal, Toronto and Winnipeg. They are small traders and workmen in the various clothing trades. Some perhaps are needed; but as they tend to form colonies in the older parts of these cities and live frequently under crowded and unsanitary conditions, they create conditions which cannot be considered as desirable. They are not encouraged and indeed strict inspection is constantly exercised to exclude the undesirable. As yet they have been relatively few in number; but should they increase it becomes incumbent upon our Boards of Health, whose representatives we are, to so restrict their tendencies to congregate in crowded quarters by by-law to at any rate lessen the evils they tend to create. The proposed Bill before the Imperial House of Commons provides that the Local Government Board may, whenever it is convinced of such overcrowding require municipal by-laws to be enacted, limiting the number of any class or nationality within any given area of a city or town.

How rapidly such evil conditions are developed may be illustrated by the history of a dozen United States cities. Warned by these examples we may well take such early steps, as will prevent their repetition in Canada. The greed of landlords may readily be controlled; while compulsory education may be expected to assimilate their children to the general population.

Fortunately for Canada, she has had time in every Province to provide for such changes in our population as the future is bound to create as it has in the country to the south of us. The hour of Canada's development has come. Her boundless resources will be developed rapidly and surely. Vested interests and great aggregations of capitals will be and are being rapidly created. Citizenship has other duties than mere personal ones; we are but individual tissue cells in the complex organism of the body politic. To no other association do these problems come with the same directness as to the members of this, the working medical officers of Ontario. Our cities are growing more rapidly than any others; we are becoming the Massachusetts of Canada, the great centre of her manufacturing industries. Separated

from my old friends in the particular duties of municipal sanitation I remain still but one of you in my relations to our common duty, that of building up the defences of the public health of the people of Canada. A sentinel on the gates of the country, I hope to still be of some assistance to you; and to you must I ever look to arm the town-guard, sound the call to arms, and rally the citizens to the defence of our homes, our streets, and our common patrimony!

Patent Medicines and Drug Foods.

Geo. G. Nasmith, M.A., Ph.D., Chemist to Provincial Board of Health.

A human being appears to differ from the lower animals among other things in being an experimenter, and from babyhood on through life his greatest lessons are the sad lessons of experiment and thus of experience. Nowhere perhaps is this tendency so well exhibited as in the attempts of people to experiment upon themselves with drugs. There seem to be several perceptible reasons for the wide spread use of proprietary medicines.

In the first place many people from carelessness in diet, overwork, or worry allow themselves to run down, and, while not quite sick enough to consult a physician are attracted by the specious advertisement of some popular cure-all. The symptoms detailed appear wonderfully like those of the interested reader and he forthwith resolves to try a bottle or two; it might fix him up, he argues, but if not no harm would result. If he is a persevering subject he sticks to it and in the words of the advertisement gives it a "good fair trial" until either disgusted or cured. If his perseverance is rewarded, and he luckily strikes something which he thinks has cured him, or as is more likely, he has become better in spite of it, then he considers himself a clever fellow, and in his delight publishes his cure far and wide. Thus we hear of the successes only; the failures are buried in obscurity.

Then there is a large number of people who are fond of drugging themselves as a sort of amusement, cranks on the latest patent medicine. These people always have something new wrong with them, and not only do they take the nostrums themselves but are extremely fond of recommending them to others.

There is a third class which takes these medicines because they like them, for their stimulating, sedative or other effects. Thus in temperance states, in the northwest, and among Indians certain remedies are quite popular. For instance, Peruna is said to be a popular society beverage. Many of the bitters, tonics, malt extracts and peptone preparations are taken for their alcohol content. I have been informed that old people who take Paine's Celery Compound do not seem to be able to stop using it. At New Liskeard in Northern Ontario, one individual takes several dozen Radway's Pain Killer every month. At Niagara Falls the negro population use a great deal of Dr. Agnew's Catarrh Cure for the effect of the cocaine present. Some of the peptone preparations tested in our laboratories were pronounced by experts almost as good as sherry.

It is a well-known fact that if a statement be repeated often enough one eventually almost believes it against his better judgement. Of this psychological fact the patent medicine vendor takes advantage; he advertises, and the most systematically and most widely advertised remedy is the best seller, —if it is not too hard to take. I am quite convinced that if a colored and flavored water were put on the market and advertised it would sell, and testimonials by the thousand would be obtained. Doubtless some of the

testimonials are from genuine cures, many are bought and many are sent in by people who have worked the faith cure on themselves.

The claims of some of the proprietary medicines on the market to-day are preposterous; some are little short of criminal in the assertions they make. And yet people in other respects normal will swallow both the advertisement and the medicine. Thus one widely known preparation, namely Powley's Liquozone or liquefied ozone, claims to be "simply liquid oxygen,—no drugs, no alcohol in it." Powley's liquid ozone depends for its properties of a germicidal nature on sulphurous acid; it is composed of about 1.75 per cent. acid, of which about half is sulphuric acid. There is no oxygen present. Free ozone, which is a gas and liquefies at 184° C., or under 150 atmospheres pressure at a very low temperature, cannot exist in presence of sulphurous acid: the latter would be rapidly converted into sulphuric acid by it. In sea air there is one part ozone in 750,000, so that if Liquozone were liquid ozone a few bottle would contain as much ozone as there is over the Pacific ocean.

Tonics and bitters are perhaps the most popular of the liquid preparations, and usually contain large quantities of alcohol, to which a good deal of their popularity is undoubtedly due. The analysis of these compounds is attended with considerable difficulty and consumption of time. The analyses are not claimed to be complete but these constituents have been identified in the following preparations.

	Alcohol by volume.	Approximate constituents.
Peruna	24.90	Vegetable extractives.
Ontario chemists' tonic bitters	15.58	Vegetable bitters.
Stringer's nervine	7.95	Sarsparilla, oil of wintergreen, sulphates.
Dr. Shoop's restorative	10. 2	Bitters, sugar, strychnine, (3-100 grains to dose).
Castoria	3. 5	
Ayer's sarsparilla	23.30	Sarsparilla, polass iodide.
Burdock blood bitters	16.00	Bitter, sugar, lime, phosphates.
Warner's safe cure	11.40	Potassium nitrate, herbs.
Hood's sarsparilla		Sarsparilla, potass, iodide.
Lydia Pinkham's vegetable compound	21.00	Sugar, bitter herbs.
Paine's celery compound	19.00	Bitter herbs, sugar, potash salts, phosphates (small quantity).
Pierce's golden medical discovery		Wild cherry extract, iron and phosphates, arsenic.
Powley's liquozone		Sulphurous acid, sulphuric acid, iron .08% phosphoric acid.
Chase's catarrh cure		Starch, menthol, carbonates, borates.
Agnew's catarrh cure (formula on bottle confirmed)		Cocaine hydrochloride, benzoates, sod bicarb, boric acid, menthol.
Beecham's pills*		Aloes, ginger, soap.
Carter's little liver pills*		Podophyllin, (¼ gr.) aloes.
Holloway's pills*		Aloes, rhubarb, saffron, Glauber's salts, pepper.
Abbey's salts*		Tartaric acid, sod. bicarb. mag. sulph. and sugar.
Eno's fruit salts*		Sod. bicarb., tartaric acid and citric acid.
Siegel's syrup*		Aloes, capsicum, licorice, sugar.
Drink cures { Mrs. Terry's drink cure*		Sugar 98%, salts 2%.
Drink cures { Antidipso		Potass.-chlorate, sugar.

* From a paper by Dr. Robt. Hutchison, London Lancet. Nov. 28, 1903.

Extracts of beef, etc:—

A large number of these preparations come under the head of proprietary medicines, since they are used to a large extent by the sick, and curative powers as well as enormous food values are claimed for them by the makers. As foods they are practically worthless; even when, as in some, meat fibre or albumose has been added their nutritive value is slight. As stimulants and restoratives, however, the meat bases, extractives and salts have undoubtedly a high value in stimulating the flow of gastric juice in cases of feeble digestion and in convalescence. Very high and worthless food values have been placed on these preparations, while as a matter of fact it can be conclusively shown that a preparation containing only 10 per cent. of solids

contains less nitrogenized organic matter than is present in ordinary beer.*

By drying four pounds of beef there will be obtained one pound of dried substance, of which 80 per cent. is nutritive proteid matter, the remainder being fat, meat bases, salts, etc. In no possible way can further concentration of the nutritive matter be brought about. If the pound be dissolved in three pounds of water you would get a fluid of the value of your original beef.

Bovril is stated to contain the entire nourishment of prime ox-beef. Analysis* shows it to contain water 29.0 per cent., total nitrogen 8.25 per cent. (including meat bases), meat fibre .73 per cent., gelatin .09 per cent.

One peptone preparation examined by me gave only the faintest reaction for proteoses and peptones. Bovinine made by a cold process contains a good deal of coagulable proteid; it gave 22.435 per cent. of solids. Most of the other peptone preparations yielded about 20 per cent. solids. In its conversion into peptone proteid becomes slightly heavier so that supposing you have 1-5 of your $1.00 bottle or about 3 1-5 oz. of peptone present, you have merely the equivalent of about 3 1-5 oz. of the dried lean of beef and worth not a bit more as nutriment.

Wampole's Grano Pepton is stated to contain in each fluid ounce approximately the digestive equivalents of

1 oz. lean beef,
2 oz. whole wheat grain,
½ oz. egg white,
½ fluid oz. milk together with

pepsin and diastase. Now there are approximately in the

1 oz. beef, .313 oz. digestible nutrients.
2 oz. Graham flour (whole wheat), 1.738 oz. digestible nutrients.
½ oz. milk, .065 oz. digestible nutrients.
½ oz. egg white, .131 oz. digestible nutrients.

A total of 2.247 ounces of the products of digestion. The label represents that in each fluid ounce there are 2.247 oz. digestible nutrients present; but in each fluid ounce I find only about 1-4 oz. solids, which is just about 1-10 of that claimed, and this is by no means all nutriment. This is one of the preparations often prescribed as a food. You see how far it falls short of being a food and it merely typefies the class of meat extracts. Meat extracts, as stated before, are valuable as tonics, not as foods.

As temperance drinks they are quite popular, being pleasant to the taste. Of the five preparations of this nature examined alcohol was present in all and their popularity is doubtless largely due to that constituent. One brand only, Armour's, of Chicago, had "alcoholic" stamped in red across the label.

Beef extract preparations:—

Liquid peptonoids: "Beef, milk and gluten perfectly digested; a pleasant and convenient nutrient."—Arlington Chemical Co., Yonkers, N. Y.
Alcohol by vol. 20.3 per cent.

Nutrient Wine of Beef Peptone: "A liquid food presenting the entire substance of fresh, raw, lean beef."—Armour & Co., Chicago.
Alcohol by vol. 20.0 per cent.

Bovinine: "The vital principles of beef."—Is a genuine, coagulable beef juice. Contains alcohol.

Mulford's pre-digested beef: "The most valuable concentrated, immediately assimilable food known." Alcohol by vol. 16.70 per cent.

Wampole's Grano pepton: "Representing the final products of the digestion of beef, eggs, and the whole wheat grain."
Alcohol by vol. 17.50 per cent.

* Allen, Commercial Organic Analysis.

As alcoholic drinks these are very expensive compared for instance with whiskey. A quart bottle of Seagram's Canadian whiskey contains 45 per cent. alcohol (by vol.) and cost 90c. A pint bottle (16 oz.) of liquid peptonoids containing 20 per cent. alcohol costs $1.00. To get the alcoholic equivalent of the quart of whiskey from liquid peptonoids one would have to pay just $4.50 or exactly five times as much.

The annual report of the Massachusetts State Board of Health recently issued contains all the work done by the board on proprietary preparations to date, many of the analyses being made prior to 1897.

Twelve hair restorer compounds contained lead to the extent of .3 per cent. to 2.32 per cent. Nine preparations for the face contained corrosive sublimate—or other poisonous salt of mercury in the proportion of one to 15 grains per ounce.

Of 61 tonics and bitters analyzed seven contained between 6 and 10 per cent. of alcohol, the others all containing over 11 per cent. For instance:

	Per cent. Alcohol by Vol.
Boker's stomach bitters	42.6 p. c.
Hostetter's stomach bitters	44.3 p. c.
Richardson's Conc. sherry wine bitters	47.5 p. c.
Whiskol, "a non-intoxicating stimulant, whiskey without its sting"	28.2 p. c.
Colden's liquid beef tonic, "recommended for treatment of alcohol habit"	26.5 p. c.
Hoofland's German bitters, "entirely vegetable and free from alcoholic stimulant"	25.6 p. c.
Parker's tonic, "purely vegetable, recommended for inebriates"	41.6 p. c.

On glancing over these figures and then over the report of the inland revenue department of Ottawa, one is at once struck with the close resemblance to the whiskeys which contain from 25-45 per cent. of alcohol. The majority of the tonics seem to run about twenty per cent., just like a whiskey diluted with an equal volume of water. In fact one cannot help wondering whether the manufacturers do not take whiskey, add the bitters and other constituents, and after diluting the same, bottle in approximately pint bottles selling for $1.00 each. A 22 per cent. alcohol tonic at $1.00 a bottle would cost the vendor from 15 to 18c. retail for the alcohol present.

In the interests of the public health of this province, and with the hope of shedding further light on the composition of these unknown preparations, in order that physicians may intelligently approve or condemn, this investigation has been inaugurated. From time to time we expect to publish further analyses.

Of late years opinion has been steadily gaining ground that the manufacture and sale of proprietary preparations should be restricted. If the public must take them it seems only reasonable that it should know what it is taking. No man wants his wife or a member of his family to become an alcoholic or a cocaine or morphine fiend by contracting the appetite from a proprietary medicine. Neither does it seem just that anyone should unwittingly be allowed to take preparations containing strychnine or arsenic which are cumulative poisons. Iodides or potassium nitrate cannot be called harmless. Digitalis, opium, cocaine and other alkaloids should be taken on advice of medical men only. Preparations containing poisons should so be plainly designated. If the compound depends for its virtues on constituents other than alcohol and the latter is essential as a preservative then the mini-

mum quantity should be used and the other constituents should be so concentrated that on dilution the alcoholic effect is nil.

In Germany all formulae are submitted to the government for approval; if they are considered to have value for the diseases specified the formula is registered and permission granted to manufacture. In England* it is laid down in the law of the subject that first it must be a genuine, original invention, and secondly that a complete description of it must be filed at the patent office so as to be easily available by the public. Neither of these requirements, however, seem to be observed. A good deal has ben said in

*London Lancet, Nov. 28, 1903.

the press recently upholding the rights of proprietary medicine manufacturers. But the public have rights in the matter also, and when preparations of large claims and little value, and when "fake" medicines are foisted on the public by money-making concerns then it is high time that some action should be taken to restrict the sale of the dishonest ones; only the latter need fear exposure. The press claims that if the formulae are published that the same may be copied, that the maker no longer has protection. If, however, the formulae were registered with the government and anyone copying the same applied for permission to manufacture the analysis would be made, and if it were found to be an infringement on other patents the necessary permission would be withheld. As it is, a large number of firms do publish their formulae both in circulars and on the bottles.

Suggestions on Sanitary Conditions in Factories and Work-shops, and how improved by Co-operation of Local Health Officers.

THOS. KEILTY, Provincial Factory Inspector.

In submitting this brief article on sanitary conditions of factories and workshops, and its relation to your Association, I desire to briefly refer to such things as are most prominent. As general conditions, first, I will deal with the growth of factories, many of which were started years ago on a small and unpretentious scale having a yearly growth until to-day we find them mammoth institutions bringing in their raw material in car-loads and turning out the finished product in the same manner. With those institutions it would be a difficult task to bring them up to the standard of a modern factory as to light, ventilation and many other conditions. Then, we have other conditions provided by the law of nature, such as, where factories are operated by water power, we frequently find them low down on the bank of a river or stream where ventilation can only be procured by artificial means and many other conditions that cannot readily be overcome with justice to the man who has perhaps the earnings of a life-time invested in such enterprises. It is, therefore, for those whose duty it is to enforce the laws of this province to meet those conditions in a spirit of fairness to all concerned. In doing this we can only hope for the best results in modern workshops that have been built of recent years.

Light. Good eyesight is a blessing that we all appreciate and if one has to work at a close or trying occupation for the eyes, good light should be provided in the work-room. Many arguments have been advanced in favor of ribbed or corrugated glass as a means of lighting workrooms, and just as many have been advanced against these as being injurious to the eyesight. Light distributed by ribbed glass is a refractory light, not a true light on account of the corrugated surface the light is distributed from many different

points, rays crossing one another at different angles produce too many focal points, which dazzle and injure the eye. This was clearly demonstrated in a factory in the State of Connecticut where a number of men were engaged making fine tools, and in a room lighted with corrugated glass windows, of the sixteen who were engaged it was found that fourteen of these were suffering from the effects of improper lighting by ribbed glass. This was decided by an expert oculist and proved by removing the glass after which there was no further trouble.

Cement floors may be classed as another condition that has been proved injurious to the workman. Being devoid of any elasticity a foundering or rheumatic ailment is developed which in time becomes chronic and invariably leaves a foundation for a permanent ailment. This has also been proven where even in modern work-shops good results were looked for by the introduction of cement floors but were afterwards supplemented by laying slat floors on top of the cement in order to provide the elasticity so essential to the workman.

Drainage is another important sanitary regulation and like the modern work-shop we find little difficulty in having these requirements observed in cities and towns that are equipped with a modern system of sewerage and water-works, but the reverse is generally the case where no provisions of this kind have been made, and in my opinion a town or city cannot have a more valuable asset than a good system of sewerage and water-works, and I would even go so far as to say that no improvised means can form an adequate protection for a city, town or village other than a good system of sewerage combined with a wholesome supply of water.

At the last session of the Legislature amendments to the Factories Act were passed providing for the more sanitary conditions in supplying drinking water, the heating of workshops, providing closet seats for a given number of employees, the standard being at least one seat for each twenty-five employees, and providing for spittoons on the recommendation of the Factories Inspectors. The latter is most important, not only from a point of cleanliness but to prevent the spread of tuberculosis, and as a further safeguard in that direction I am of the opinion that such spittoons should be provided with an antiseptic solution or disinfectant that would prevent the spread of disease in such cases. As it is difficult for Inspectors to detect the victims of such diseases in their primary stages, it is necessary to have the fullest co-operation of Medical Health Officers in dealing with such cases, and while on this subject I desire to draw the attention of your Association to another evil, by no means new, that is the proper sanitation of barber shops. Much has been written and said on this subject but up to the present nothing of a definite nature has been done, and such conditions, as exist in many places, are to say the least very unsanitary, for instance, even in some shops which are considered among the best, hot towels are used continually for a whole day with one disinfecting in the morning by means of a bath of hot water. Brushes, razors, combs, cups and soap are used without consideration. While I do not believe that a law could be framed that would meet all the requirements, or yet suit every person interested, yet, it seems to me high time that a start was made in that direction, and like other laws they could be amended, from time to time, to meet the requirements. The following conditions have been adopted by an enterprising barber in the town of Woodstock, which he describes as follows:—

1. All towels before being used are laundried.
2. All tools used have been disinfected by Formaldehyde gas.
3. All razors immediately after being strapped are dipped into a solution of Bichloride of Mercury.

4. All toilet used contains a high percentage of peroxide of hydrogen, purely antiseptic.

5. Each customer is supplied with a brush thoroughly cleansed in a solution of Bichloride of Mercury.

6. No shaving cups are used, the cream is made from shaving soap, which is used from a tube, and the same soap is used for one application only.

The foregoing are but some of the many ways by which sanitary conditions might be improved, as I have in mind the necessity of keeping within a reasonable limit that would be available to the general trade, and thereby prevent monopoly. There are many other conditions in factory life that could be discussed with advantage, such as heat, ventilation, gases, vapors, floor vibration, etc., but I will content myself for the present by briefly referring to the relations existing between the Local Medical Health Officers and the Factories Inspectors. I do so with all due respect and credit to your Association having in mind the great progress made by the profession during the past quarter of a century, and for which this Province is deeply indebted to your Association for providing ways and means to combat the various forms of disease and epidemic that may arise through want of proper sanitation, overcrowding and other conditions. In carrying out the conditions set forth in your deliberations it occurs to me that you meet a most difficult problem under present arrangements. First, I desire to commend most heartily some of the Medical Health Officers of this Province, who, regardless of any pecuniary loss or the loss of personal friends, have insisted on the conditions of the Provincial Board of Health, and subordinate Boards, being fully complied with. In other cases I have found Health Officers who because of pecuniary interests involved, have frankly laid bare the conditions that prompt an indifference in enforcing the Laws. In one case that I have in mind the Medical Health Officer told me that he was appointed without solicitation on his part and that to carry out the conditions required by the Health Act, or the Factories Act, would not be to his best interests, as such regulations enforced would insure a loss of friends and therefore a pecuniary loss, as he said, in my case there is no salary, and speaking frankly I do not purpose making enemies in my business, in fact would rather decline such honors by resigning. I advised him that the latter would be the proper course to pursue in his case, as the laws were prepared with great care and deliberation and in nearly every case are the results of practical experiment, and neglect to enforce or comply with the laws would render much valuable time and labor useless. The question arises, what is the remedy? It would be presuming on my part to prescribe a remedy but suffice to say that in my experience going through the Province as Inspector of Factories, I believe that both an evil and injustice exist. An evil where the law is not complied with, and an injustice to the Medical Health Officer who does not receive a sufficient remuneration to protect him at least against pecuniary losses. I might suggest that if a territary composed of grouped counties or municipalities were consigned to a Health Officer paying him an independent salary for his services, in that way his time could be fully occupied with greater advantage to the entire province as well as the territory under his immediate jurisdiction, such might be one way to overcome the difficulty, however, connecting the duties of the Factory Inspector with that of the Medical Health Officer, there is so much identical labor that it is most important to the Factories Inspectors to at all times have the fullest independent support and co-operation of that department, and such is my only excuse for referring to the above in this article.

Before closing I desire to refer to another regulation which the Factories Inspectors find in some places very poorly observed, I have reference to the registration of births, for instance, in a certain town that I have in mind, out of a possible forty-four births certificates authorized by the parents, we were only able to trace one in the Registrar-General's department, and the same applied to the Division Registrar, where those children were said to have been born. This in itself shows a gross indifference on the part of some person whose duty it should be to have these births recorded and deprive these children of a birth record, the value of which cannot be estimated.

A Perfect Sewerage System for Rural Homes, Schools and Factories.

M. J. Quinn, Provincial Mechanical Superintendent.

It is perhaps no exaggeration to say that, having regard to the frequency with which it comes up for consideration, and many other circumstances, the question of properly disposing of sewage is one of the most important matters with which the health authorities throughout the country have to deal, and yet it is a remarkable fact that in these days of popular education, when the people enjoy the benefit of free literature and lectures on fruit growing, dairying, domestic science, etc., that a knowledge of so important a subject, and one so closely allied to their physical and moral welfare is confined to a limited number.

True a vast amount of experimenting has been done during recent years, and the matter has received a great deal of attention from scientific men, the results of whose labors have been freely discussed at medical conventions and reported in Medical Journals, but the valuable information so obtained has not reached the great mass of the people at all.

In the matter of public sanitation, the question of disposing of sewage in small towns and villages as well as in less populated districts, where by reason of its great cost a general system of sewerage is impossible, is daily becoming of greater importance, and as the title of my paper would indicate, that is the phase of the question with which I propose to deal. The system to which I intend to refer is known as the septic tank system, and I believe that nearly all who have studied it are agreed that it is at once the most natural, most scientific, simple and economical system in use to-day, and speaking from a personal knowledge of scores of the systems, I am in a position to say that it is worthy of all the good things that are said of it.

I realize, that, apart from a description from a mechanical standpoint, anything I might say to medical men regarding the system would be superfluous, but for the benefit of the laymen who may be in need of information on the subject, and in order to emphasize the necesity of carrying out every detail, in constructing a system as hereafter described, I deem it wise to briefly refer to the fundamental principals which govern it.

It is a matter of common knowledge that living earth—or top soil,—is a powerful purifying agent, but comparatively few are aware that the presence in it of countless numbers of bacteria, or microbes, is alone responsible for the chemical changes brought about in waste matter placed beneath its surface, and that these bacteria, not only through their action remove and destroy the dangerous properties of such waste matter but actually convert them into plant food, which being taken up by the vegetation is again consumed for the sustenance of life. Pasteur divided these microbes into two classes, viz:—anerobes, or those which lived apart from air, or derived their oxygen from decaying compounds, and aerobes, or those which require plenty of

fresh air for their development, and as both classes are considered necessary for the complete reduction of waste matter, it will be seen that if sewage is placed too deep in the earth, as for instance in a cesspool, where, owing to the absence of air, the necessary aerobic bacteria cannot exist; it may pass down deeper in a putrid state, and, finding its way in the water supply, not unfrequently results in an outbreak of typhoid fever or some intestinal disease.

The two classes of microbes referred to, have properties somewhat differing from each other, but the net result of their work under proper conditions is the beaking down of the solid matter in the sewage, the disintegrating of its constituents and the conversion of the whole into liquids and gases, in which form it leaves the septic tank, the former to be distributed under the surface of the earth, where, by reason of its contact with free oxygen, bacterial life is most active, there to be still further reduced and finally converted into nitrates, which are readily taken up by the vegetation on the surface, and the latter passing up high into the air, as hereafter described.

With this brief reference then, to the principles which underlie what is conceded to be a most efficient system for the disposal of sewage, I propose to indicate how it should be constructed; and in order that I may the more readily make myself plain, I have drawn for your inspection a number of diagrams which I trust will accomplish the desired result.

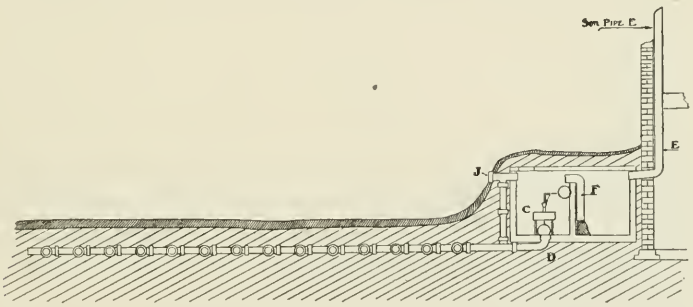


Fig. 1.

In fig. 1 is shown an elevation of a complete system built on level ground, with the tank placed close to the wall of the building,—where in fact the large mapority of those now in use are located.

The tank should be built of brick or stone, laid in and lined with cement, or of solid concrete, the main object being to have it impervious to moisture.

It will be noticed that the tank is divided into two compartments, an over-flow pipe "F" being built into the dividing wall, the mouth of the said overflow being within seven or eight inches of the bottom of the tank, and being covered with a wire screen about the size of an ordinary pail, the mesh of said screen not exceeding three-quarters of an inch.

The main soil pipe is represented by "E" and should be directly connected with the closet, bath sink, etc. It extends from the same compartment in which the overflow is placed to a point two or three feet above the roof, said pipe acting not only as a conductor of sewage to the tank, but also as a channel by which any gases in excess of those in solution, may pass out to the atmosphere at a height which renders it impossible for them to inconvenience the occupants of the building.

"J" in the second compartment admits fresh air, which passes freely over the centre partition,—spaces being left in the top of the latter for the purpose,—and up through the soil pipe to the roof.

In the centre of the second compartment is placed an automatic valve "C," the said valve is caulked into a four-inch cast iron bend, as ordinarily used by plumbers, and which is securely built into the bottom of the tank during its construction. The top of the hub of the bend is usually left slightly lower than the level of the floor of the tank.

From the said iron bend is run a line of glazed tile pipe, four inches in diameter, having a connection with the fresh air pipe, for the purpose of ventilation, and a number of openings placed at intervals of two feet or more from which are run branches of four-inch field tile with loosely butted joints.

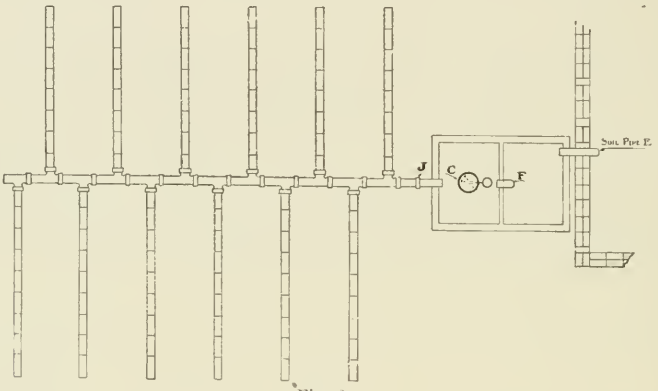


Fig. 2.

Fig. 2 shews a plan of the whole system and illustrates one way in which the tile may be laid, though, as will be manifest, they would do equally well if all laid in one side of the main carrier in any number of branches, of any length, providing a sufficient number in the aggregate are laid, and the rows are not placed closer together than two feet in light soil, and a somewhat greater distance in heavy soil.

The field tile should not be placed more than one foot below the surface, and must be perfectly level, for the reason that if given a fall the earth surrounding the low ends of the system would receive more than its share of liquid sewage, and might in time become fouled. While if level, the earth surrounding every tile has an equal amount of work to do, and will produce most satisfactory results.

Briefly then, the operation of the system is as follows:—

The sewage from the building enters through soil pipe "E", filling the first compartment in which all solid matter is retained until it is reduced by the contained bacteria which multiply and develop very rapidly. In a liquid form it is allowed to enter the second compartment through overflow "F" which is turned down because of the presence of the bulk of the organic matter in suspension on or near the surface.

When the liquid has risen in the second compartment to the height at which the unlocking float on the valve has been set, the valve automatically opens, and discharges the contents of that compartment, be it fifty or a thousand gallons, into the system of field tiles, through which it percolates into the surrounding earth, to be taken care of by nature as as already described.

As the tank takes from twelve to twenty-four hours to fill, it will be obvious that there will be abundance of time in which the water in the tiles may soak away before it again discharges.

To prevent the gases of decomposition escaping through other than the proper channel the tank must be covered first with rough plank, and then with five or six inches of earth, which in turn, if desired, may be sodded over.

In figuring out the size of tank necessary, the following may be taken as a safe rule, viz.:—for every occupant of a private house or hotel, allow three cubic feet of space in each compartment, while for a school or factory, where, as in the case of a house, nothing but domestic sewage is to be treated, one-third less space will be sufficient, and for every cubic foot in one compartment (or one-half the tank lay) thirteen feet of four-inch field tile.

It will be obvious that, as in the case of ordinary stable manure,; human excreta, if deposited in its solid state just below the surface of the earth, would entirely disappear in a very short time, and the system just described is merely a most convenient and sanitary way of automatically accomplishing that very desirable result, with the accompanying advantage of not only depositing it in the earth partially treated, but in a much more favorable condition to receive final treatment than could possibly obtain if the former method were adopted.

Anticipating the difficulty which will be encountered where there is a considerable fall in the ground surrounding the building to be drained, I would refer you to fig. 3 which shews a number of terraces each receiving a portion of the effluent from the tank.

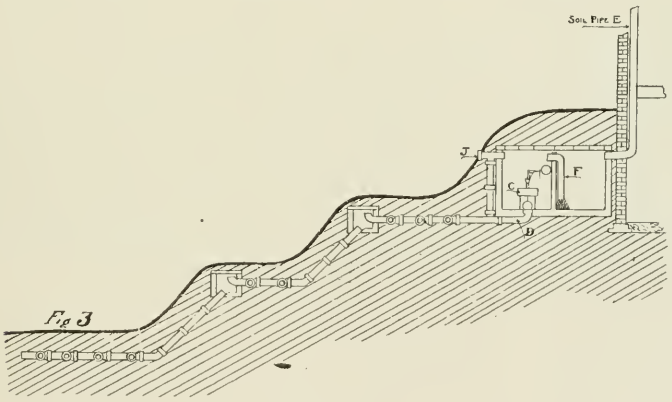


Fig. 3.

It will be noticed that the end of the glazed tile is turned up a few inches on the brow of each terrace, the obvious result of which is that all the field tiles at that level must fill before the sewage can rise and overflow to the tiles on the next lower level, where the same operation takes place, and so on for any number of terraces, and as will be apparent, the sewage passing into the tiles on a high level cannot possibly escape to those lower down, so that the earth surrounding every tile, will have its full complement of work to perform.

Fig. 4, the horizontal scale of which is somewhat exaggerated, shews the proper relative position of the tank to the house where the field tiles have to be placed on a level considerably below that on which the building stands. In such a case it will be evident that were the tank placed on the high level, the discharge would come down with sufficient velocity to wash out both earth and tiles, while the discharge from the house to the tank as shown will not have any injurious effect on the latter.

In answer to a question which arises in the minds of most people who have given consideration to the system, I may say that it will not freeze

in winter, even when the frost penetrates the ground for several feet everywhere except where the tiles are laid, and, as may be expected, splendid results may be obtained in vegetables or flowers if the tiles are laid under a garden.

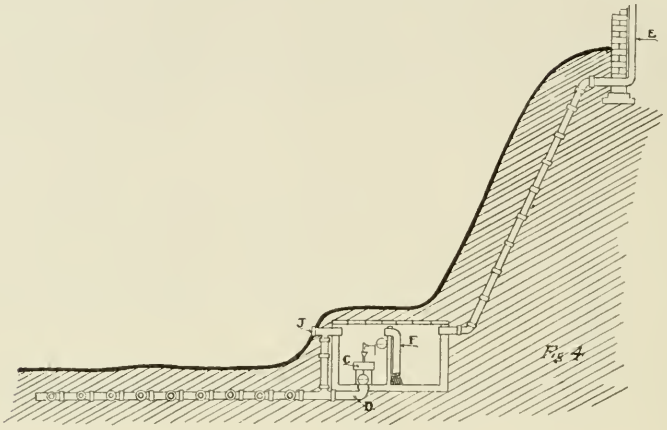


Fig. 4.

In conclusion I would simply refer to a few of the principal points which should be kept in mind in constructing such a system, viz. :—

Have the tank covered with a few inches of earth, to prevent the escape of gases, except through the soil pipe stack. See that the valve discharges at least once before the tank is covered in. See that no trap is placed on the main soil pipe to prevent the free passage of air across the tank and up to the roof, and that the necessary space for the air is left in the top of the centre partition, and, finally, take care that no disinfectants or chemicals of any kind are allowed to enter the tank, if the life of the bacteria, upon which the system depends for its success, is to be preserved.

Fourth Quarterly Report of Secretary 1904.

CHAS. A. HODGETTS, M.D., Secretary.

To the Chairman and Members of the Provincial Board of Health:—

GENTLEMEN,—The returns for contagious diseases for the quarter ending September 30th last, are, I am pleased to report, on the whole most satisfactory, whether considered from their case incident or virulence, as determined by the mortality rate.

The appended report by the chief clerk gives the returns for the quarter ending September 30th. (See report immediately following this.)

The marked increase in Typhoid Fever is the most prominent item to refer to—not so much for its wide-spread almost endemic character, but by reason of the fact that epidemics have been reported from widely separated places. No less than 148 cases alone being reported from the City of London, from North Bay 48, and 20 from Fort William, and Port Arthur 36 cases. As separate reports will be made on the outbreaks at London and North Bay, together with Dr. Amyot's report on the bacteriological examination of samples of water examined, reference will not be made to them here. It is, however, quite evident from the information to hand, that water pollution is the cause in every instance of the outbreak—which emphasizes the fact that the utmost care must be taken by health authorities to preserve their water supplies from contamination, whether the source be wells, lake or stream. Too often the relative positions of the well or the intake pipe and the barn, stable or cesspool, are not carefully considered, and a long continued rainstorm results in water contamination by reason of the large amount of surface washings carried directly into the source of supply, with the inevitable result of an outbreak either of enteric fever or some intestinal trouble according to the specific character of the bacterial infection. To prevent this pollution, it should be the duty of each Local Board of Health to employ an intelligent officer to examine periodically into the conditions surrounding the water supply of each inhabitant, and if necessary take samples for laboratory examination—further, if pollution is found to exist, either the source of the same should be removed or condemned, and the supply from that particular source being unfit for domestic use, forthwith stopped.

Further, Municipal authorities must be alert to the fact that what has once been a source of good water supply, often becomes, by reason of the rapid growth of the place, a polluted well, stream or lake, presenting a condition, which at the time of the inception of the system was never thought of. In the case of a town the sewage emptied into a body of water from which the water supply is taken, has increased to such an extent that admixture takes place through the very increase in volume. In the smaller towns and villages without public systems, the pollution of wells and springs is an ever increasing difficulty—and it behooves the individual householder and local authorities to bear this in mind and see to it, that either of these sources are not contaminated by the placing of the cesspools or stables in too close proximity to either. With the rapid growth of towns whereby fields become imity to either. With the rapid growth of towns whereby fields become it cannot be expected that what in a primitive state is pure, will remain so.

The question here arises, what is the best course to pursue in regard to both public and private supplies.

In view of the fact that it is almost impossible to be your brother's keeper and have a control over how and where he shall dispose of his wash water, sewage and excreta—and also that water is often polluted at a considerable distance from the point where it is taken for consumption. The one answer is to filter before use, for with the proper kind of filter in use, we have assuredly the best guarantee of always securing a drinking water which is likely to be at all times free from contamination. Though to maintain this standard, in the case of corporations, requires the local authorities to place the system in charge of a competent official—and this Board should not only require an annual report from the local authorities, but should for the interests of the general public, institute a periodic inspection of both water and sewage systems.

I would particularly point out the danger of the pollution of milk supplies by reason of the use of the contaminated well water of the farm yard, which water is used to wash out the milk cans—too often I fear is the infection spread from this source, for the cool crystaline spring water of the farm yard is not always free from contamination, and therein often lurks the germ of typhoid.

Smallpox. The returns received for the quarter indicate that only 19 cases were reported from the organized municipalities to September 30th last. This gratifying condition of affairs promises very hopefully, that during the coming winter but little will be heard of this disease, and as only one new case was reported during October, and that came from Michigan, it may be considered that the province is practically once more free from the disease—but this fact should not prevent local authorities insisting on the vaccination of all infants as provided for by the Act.

The total amount of expenses incurred for the suppression of the outbreak of Smallpox in the Temiskaming District, was $1,611.77—the work lasted in all for a period of twelve weeks.

In addition to these amounts $327.80 has been paid on account of the same disease at Wahnapitae, and $165.00 in Chisholm Township, both in the unorganized portions of the province.

The reports of the medical men sent into the Temiskaming District are herewith submitted. The work has been well, and considering the difficulties met with, rapidly done, and no further cases have been reported. It is an instance of what can be accomplished in the sparsely settled districts, by a house to house inspection, and compulsory vaccination.

Scarlet Fever. Although in the first month of the quarter only half the number of cases were reported, yet the increase during August and September, has been proportionately greater than in the corresponding months of 1903—chiefly due to the fact that in some of the rural municipalities many mild cases were unattended by a physician, and no precautions were taken in regard to isolation—the mildness being partially indicated by the low mortality. In every instance where active measures have been taken, the results have been all that could be desired.

Diphtheria still continues to maintain the lead both for case incident and mortality—and it cannot but be felt that medical men too often forget to avail themselves of the opportunity to forward swabs to the laboratory for examination, frequently deferring this very correct method, until it is too late to prevent the infection of either a whole household, or a schoolroom. A physician should never be satisfied with passing by a "suspicious sore throat," as though it were a case lightly to be dealt with, but strive at accuracy in diagnosis, by transmitting a carefully taken swab to the laboratory at the earliest moment; and in the meantime adopting precautionary measures to prevent others becoming infected.

The decrease in case mortality is most gratifying, as compared with the same quarter of 1903, it being 15.76 per cent. in the latter year to 11.95 per cent. in this. As the returns do not permit of a comparison between the cases treated with and without anti-toxin, it amounts only to conjecture to attribute this favorable decrease to the more intelligent and general use of the serum, but from information gleaned during my miles of travel, I am of the opinion, such is the case.

The following table prepared by Dr. E. W. Goodall, Medical Superintendent of the Eastern Fever Hospital, Homerton, London, of cases treated in the hospitals of the London Board, is most interesting in this connection, as showing the relationship between serum treatment and mortality, the latter decreasing as the former became more general.

TABLE I.

Year.	Case mortality.	Percentage treated with antitoxin.	Year.	Case mortality.	Percentage treated with antitoxine.
1888	59.3	....	1896	21.2	66.2
1889	40.7	....	1897	17.6	80.2
1890	35.5	....	1898	15.3	81.4
1891	30.6	....	1899	13.9	87.8
1892	29.5	....	1900	12.2	88.3
1893	30.4	....	1901	11.1	86.5
1894	29.2	....	1902	11.0	87.9
1895	22.8	61.8	1903	9.6	89.2

Very few cases of Diphtheria were treated in the Board's Hospitals in 1888 and 1889.

From this it is quite evident that even with all the advantages of hospital and serum, patients die in London, although the individual experience of some medical men in this province have led them to believe that antitoxin is a specific that can be relied on in every case, and they fail to see why others are not so successful. These creatures of fortune forget in a consideration of this important question, a conclusion can only be arrived at after a careful study of a large number of consecutive cases, embracing types, ages, days of the disease upon which serum was used, quantity of first injection, and period of time elapsing between subsequent doses being administered etc. Certainly the facts presented in the table referred to, are being confirmed in this province as far as statistics can show.

Tuberculosis. It is not only lamentable, but it is criminal, that death's harvest should be so materially increased month by month and quarter by quarter, as appears from the returns, without any effort being made by municipal authorities in the way of providing for the treatment of persons suffering from this dread disease, in Municipally-owned Sanatoria. Four hundred and twelve of Canada's sons and daughters were its victims during the quarter—an increase of 20 per cent. over the corresponding quarter of 1903. If such were my report regarding scarlet fever or diphtheria, in any one section of the province, there would be such a stir made by the public, that active steps would be taken by the municipalities and the province, to check them at once—these diseases affect the infants and children of our population, yet here is one slowly but surely spreading sickness and death among the wage-earning portion of the community, and we are doing virtually nothing.

The ravages of fire or flood—or an epidemic of typhoid fever, are followed by the speedy adoption of preventive measures—which often entail the expenditure annually of large sums of money. But we present in this Twentieth Century a remarkable spectacle of public inertia as regards any

legislative enactment by which this Board can deal with the question; and we find that our efforts to secure notification of the disease, are but indifferently received. We know the right but we cannot follow our dictates.

Again on the other hand corporations will not face the question which stares them in the face—they are scared into action by the ravages of scarlet fever and diphtheria, typhoid and smallpox, but the bacillus of tuberculosis, has, up to the present, not created any terror in their souls, and they are lulled into the belief that a small contribution to a charitable association is sufficient to placate this insatiable Moloch. They offer at the public cost, hospital accommodation for a selected few, and shut their ears to the cry of the large remainder. Surely such a deplorable condition of affairs finds its only simile in the history of factory life in England during the early part of the last century; and as surely as that social evil called for drastic measures, so does this evil of tuberculosis call for prompt and efficient action. As the state or municipality provides for the treatment of the mentally diseased at the cost of the public, so must it be with the tuberculous—but the prospects in the latter case are more hopeful and brighter—insanity will increase, but tuberculosis will decrease, and the annual expenditure will lessen.

I do not wish to be misunderstood. Private enterprise in so-called charity has its useful sphere in providing accommodation for those who are able to pay for their treatment, but the bulk of cases are unable to, and for such the state or municipality must provide; and that provision should be under the direct control of the ratepayers, in a similar manner to other contagious diseases.

Miscellaneous. During the quarter considerable time has been taken up in the examination into proposed water and sewerage systems, among which were the water systems of Thamesville, North Bay, Creemore, Stratford, Simcoe, and East Toronto, and the Sewerage System of North Bay, Palmerston and Stratford. Separate reports upon which will be considered, either by the Board or the respective committees.

I have also to report regarding the outbreak of typhoid fever at North Bay and London.

The joint report of Dr. Amyot and myself, on the sanitary condition of the Muskoka and Kawartha Lake Districts, which we inspected together after the close of the summer season, will also be placed before you for consideration.

The circular ordered to be issued by the Board to physicians, regarding the non-notification of enteric fever, has been distributed, and already the good results are noticeable, particularly in the fact that the medical superintendents of the hospitals, have in many instances expressed their willingness to comply with the same. The failure to secure returns regarding this disease is largely to be attributed to the fact that physicians generally were ignorant of the requirement of the law in this particular respect, but when their attention has been drawn to it, I am assured from many quarters of a ready compliance.

As we are at present without the services of a Medical Inspector, I have sent out a letter to the various companies doing business in the unorganized districts, directing their attention to the requirements of the Act and Regulations re camps in their districts, and if the duties of the office will permit, I propose making a short tour of these districts before the end of the year.

The Report for 1903, has, I am pleased to state, at last been published and distributed. In style, it is behind that of previous years, owing to the fact that the printers were given authority by the Government to use a different form, owing to the destruction by the recent fire of most of the type in the city, which the contract calls for.

You will, however, be pleased to learn that Parts 1 and 2 of the Report for 1904, is now in print, and will shortly be issued.

The Executive of the Canadian Association for the Prevention of Tuberculosis, recently met in Ottawa to consider the Report of the Special Committee appointed to report on the securing of Dominion and Provincial Government assistance for the erection and maintenance in each province, of a Model Sanatorium for the treatment of this disease—when climatic and other conditions as effecting the disease could be studied, and which institution would be an object lesson to municipalities, as the best method and system to be adopted for the more general treatment of the consumptive.

The report, copies of which will be published, was adopted, and in accordance with the recommendations, petitions will be distributed to wardens of counties and heads of municipalities throughout the Dominion for signature, and upon their return, the same will be presented to the Dominion and other Governments—fortunately in this province the Act of 1900 paves the way for the establishment of such an institution in this province, whereby the treatment of this communicable disease can be removed from the realm of private charity, to that of a public necessity.

From an informal conference with the Chairman and Secretary of the Manitoba Board of Health, I am assured that the Board of that province is in hearty accord with the proposal, and will assist in every way possible the suggestion of the Association. Already a local organization has been incorporated in that province, and a sum of money collected towards a Provincial Sanatorium, and the only thing required is, some such action to stir up the public to a sense of its responsibilities and duties. It might be well for the Board to consider how far united action on the part of the several Provincial Boards is desirable, to properly represent to and urge upon the Dominion Government some such course.

An important step in the arousing of public interest in this connection, was made at the St. Louis Congress last month, which is described as follows:—

"To-day has been the greatest day in medical lore in the history of the world," enthusiastically declared Clark Bell, the retiring chairman of the Executive Committee of the National Congress of Tuberculosis, at the closing session of that organization yesterday afternoon. "It has enlisted the services and the co-operation of the International Engineering Congress, comprising the greatest authorities on sanitation of both continents, and of the National Fraternal Congress, numbering five and one-half millions of people.

"These forces are allied against the germ of consumption. They will begin actively to interest the legislatures of the various States and foreign Governments in the enaction of laws designed to prevent the spread of the disease which to-day is killing one-seventh of the world's population.

"The medical fraternity the world wide will receive the news of this alliance with satisfaction. No such organization to combat the spread of the disease from which there are 1,200,000 persons suffering in the United States, ever has been completed before, and it is the only successful way to meet the deadly foe.

"Hereafter these two great organizations will send their delegates to the National Congress on Tuberculosis and take part in its deliberations. With the wealth, influence and intelligence of this great triumvirate, the death rate in this country, which is indeed terrifying, should be lessened, beginning with this year."

(*Obituary.*) Since the last quarterly meeting of the Board, a former member, one who on acocunt of failing health was compelled to seek a more

congenial clime, has been removed by death, Dr. McCullough having died in the month of July while living in the North-West Territories. To his widow and family our heartfelt sympathies in their sad bereavement are due.

The cause of Public Health, certainly in the English-speaking world, has to note with regret the loss of Sir J. Simon.

Although some 30 years have elapsed since Sir John Simon ended his official career, yet the foundation which he laid during the years of his administrative work, is the basis upon which others have built.

In the year 1848 he was elected M. O. H. of the City of London, and in 1855, after consideration he accepted the position as medical officer to the Privy Council, and the many valuable reports made by him, cover a wide area and of high importance. Just one will be referred to, viz.:—that written for Quain's "Dictionary of Medicine", where in "he clearly laid down the theory that contagious emanations proceeding from the sick must consist of definite particles, since they obeyed the laws of definite particles and no others; and that these particles must differ among themselves, being in every case peculiar to the disease which alone produced them, and which alone they could reproduce"—a theory which has since received its proof. Resigning the duties of office in 1876, he was succeeded by Dr. Laton, being made a C.B. he was subsequently made K.C.B. at the Queen's Jubilee in 1887. He died at his home in Kensington Square on July 23rd last, in his 88th year.

During the quarter, the demands from municipalities for a visit of an officer of this Board has been many, and from the character of the requests it is quite evident that Local Boards of Health are either unwilling, or are often unable to grapple with a sanitary condition of a trivial nature—the only remedy to this must be the adoption of the county or district Health Board, with its M. H. O., for certainly in this large Province, it cannot be expected, nor indeed is it desirable, nor intended by the Public Health Act, that this Board should interfere.

From the number of requests from physicians for blank forms for notification of contagious diseases, it is certain that one reason for the imperfect nature of the monthly returns, is the failure on the part of Local Municipalities to comply with Section 89 of the Act, and I propose to issue a circular at an early date in the matter.

My atention has been drawn by the Medical Health Officers of one of our cities, to the injustice of an Act on the Statute books regarding the licensing of dairies by Township Board of Health, whereby city and town authorities are compelled to accept such certificates and permit the sale of milk for such dairies, without having any control over the same. The bearing of this Act is such as to preclude the authorities of the urban district, exercising any sanitary supervision when the dairy is outside the municipality, and should, in my opinion, receive the attention of this Board, especially as the spreading of enteric fever by means of milk, is one of vital importance to all urban municipalities, and it is well known that to leave such matters to rural Boards of Health or Medical Health Officers, is neither prudent nor wise. To the former should be given the power to inspect the premises, examining carefully into the quantity and quality of the water supply of the dairy, the sanitary condition of the barn and yards; also as to the freedom of the cattle from disease, and upon the report of the urban officer, should the application for license be considered.

The Laboratory. This branch of the Board's work under the supervision of Dr. Amyot, is rapidly growing, from the fact that physicians and Boards of Health are availing themselves more and more of the advantages which it affords. With an experimental sewage plant, the possibilities of its greater usefulness to the public generally, would be much enhanced.

Two other matters of public interest to which I would refer, relates to railroad travel.

I would suggest the advisability of this Board taking some action looking to the regular and systematic disinfection of all passenger cars in use in this province—particular attention being given the disinfection of all Pullman cars and contents, at the termination of each journey, whether it be daily or not so frequent. It has been my experience within the last few months to travel in a Pullman, when one of the passengers freely expectorated after attacks of coughing during the night, into his berth—and from the sounds I judged it was neither into a cloth or other receptacle—and the other instance was, a child suffering from whooping cough, which was wafted nearly across the continent—all the way in a crowded Pullman. From information gleaned from railroad officials, I am of the opinion nothing is done to disinfect either mattresses, blankets, pillows, or hangings, much less the seats and car itself—they appear to be run for years without any precautions being taken.

The other question is also related to railroad travel, viz.:—the sourse of the water supplied for drinking purposes—where is it obtained? And another matter which to the railway employees is of great moment, is the source of the water which feeds the engines, and which water is likely to be drunk by the train hands—and those living or working at the points where water tanks are placed. I have seen along the line of one of our systems where water is no doubt contained by reason of the closet being placed in such a position that every rain storm would carry impurities into the creek or well; or the failure to provide such accommodation, offers greater facilities for contamination, especially when working gangs are around. The argument that the water is for engines only, does not protect nor prevent the employees quenching their thirst—indeed, often a tap is to be found which offers the very opportunity for doing so.

Perhaps while the Railroad Commission is directing its attention to the equalization of rates and adjustment of differences as between municipalities and companies, that the consideration of the minor matter of the prevention of disease and death to many good and useful Canadians, may be worthy of consideration—and even when considered from the standpoint of economics, prompt them to action. It certainly should, but I fear we will be told it is a Provincial affair.

All of which is respectfully submitted.

CHAS A. HODGETTS,
Secretary.

Statistical Report of Contagious Diseases.

G. B. LINDSAY, Chief Clerk.

The number of cases and deaths of contagious diseases for the third quarter of this year except typhoid compares very favorably with those of last year. The total cases exclusive of typhoid are 1,472 and deaths 636, while for the same period in 1903 we have 1,606 and 621 deaths reported.

Smallpox. The returns of this disease gave nineteen cases with two deaths as against fifty-four cases with the same number of deaths a year ago or a case decrease of 64.8 per cent.

Scarlet Fever. While the reduced case incident is not so marked as that of Smallpox yet we have a case reduction of 16.6 per cent. and in deaths 45.6 per cent.

Diphtheria. The reports of this disease show a decided improvement has taken place, there being a case decrease of 15.2 per cent. and in deaths 35.5 per cent.

Measles and Whooping Cough. As the return for this are so very incomplete any comparison would be misleading.

Typhoid Fever. This disease as reported shows a marked upward tendency over the same period of last year, there being an apparent case increase of over 200 per cent. but here also comparisons may be somewhat erroneous for in the past, returns were far from being complete, although the more recent ones show some improvement in this respect, yet the fact remains that we have 37 per cent. more cases with 39 more deaths or a mortality increase of 44.8 per cent clearly indicates this disease has a much greater prevalence throughout the Province than for the same months in 1903 and in some localities has become epidemic.

Tuberculosis. The increase here is due no doubt to Local Board making better returns and regarding it as a contagious rather than an hereditary disease.

The total deaths from all causes for the respective quarters are 5,872 and 5,893 or a decrease of 0.3 per cent.

Third Quarter for 1904.

Months.	Small Pox.		Scarlet Fever.		Diphtheria.		Measles.		Whooping Cough.		Typhoid.		Consumption.		From all causes.
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	
July	13	1	91	9	149	13	15	4	25	8	65	10	185	179	1,861
August	8	.....	132	9	172	25	3	1	19	15	293	50	196	188	2,024
September	8	1	102	7	164	20	12	3	31	7	182	66	156	145	1,987
Totals	29	2	325	25	485	58	30	8	75	30	540	126	537	512	5,872

Third Quarter for 1903.

July	29	1	187	26	209	36	44	5	25	11	47	18	139	139	1,873
August	15	1	103	14	122	24	31	5	44	16	115	32	147	147	1,992
September	110	.....	100	6	240	30	1	.....	11	11	111	37	149	149	2,028
Totals	54	2	390	46	571	90	76	10	80	38	173	87	435	435	5,893

Laboratory Report for the Quarter Ending Sept. 30th, 1904.

JOHN AMYOT, M.B.

Summary of the work done during the quarter is as follows:—

Municipalities.	Diphtheretic Swabs. Release. +	Release. −	Diagnosis. +	Diagnosis. −	Tubereulous Sputa. +	Tubereulous Sputa. −	Typhoid Bloods. +	Typhoid Bloods. −	Miscell'neous Specimens.	Waters. Chemical.	Waters. Bacterial.	Total Number for Month.
July. 130.....	15	42	26	45	57	96	25	37	6	4	48	401
August. 128.....	8	8	30	24	52	86	48	59	18	12	113	459
Sept. 112.....	12	24	17	23	40	54	31	86	20	7	68	381
	35	74	73	93	149	236	104	182	44	23	229	1,241
	275				385		286		44	252		1,241

Of the 275 diphtheritic swabs, 109 were for purposes of Release and the remainder 166 for Diagnosis, of which number 73 were confirmatory of the diagnosis. Amongst the miscellaneous specimens, Malaria was found twice, Favus twice, Linea twice, Tape-worms twice and once a specimen thought to be an intestinal parasite proved to be the seeds of berries (eggs) and the worm the spikes of the seeds.

The examination of the Toronto city water has been continued since March 25, 1904. One hundred and fifty samples on as many days have been examined. Twenty-five of these have shown pathogenic or suspiciously pathogenic bacteria on the days indicated in the following table. (The *colonoid* bacteria here indicated are such as by their close resemblance in the various data obtained in the process of their identification place them in close relationship to the colon bacillus and from our experience with these organisms should be regarded as suspicious of pathogenicity or at least of sewage pollution.):—

1904. Month.	Day of month.	Colon bacilli.	Colonoid bacilli.	Strepto-cocci.	1904. Month.	Day of month.	Colon bacilli.	Colonoid bacilla.	Strepto-cocci.
March	25	none ...	none ...	present..	May	29	none ...	present..	none ...
"	26	present.	" ..	none ...	"	30	" ..	none ...	present..
April	1	present..	" ...	" ..	"	31	present..	" ..	none ...
"	2	none ...	present..	present..	June.....	13	none ...	present..	present..
"	4	present..	none ...	none ...	"	14	present..	none ...	none ...
"	5	none ...	present..	" ..	July	18	" ..	" ..	present..
"	7	none ...	" ..	" ..	"	27	none ...	present..	none ...
"	10	present..	none ...	" ..	"	28	" ..	" ..	" ..
"	14	none ...	" ..	present..	September....	9	" ..	" ..	" ..
"	15	none ...	present..	none ...	"	29	" ..	" ..	" ..
"	17	present..	none ...	" ..	October	1	" ..	" ..	" ..
"	20	none ...	present..	" ..	"	14	" ..	" ..	" ..
"	29	none ...	" ..	" ..	Total		8	14	6

It will be seen by the above that colon bacilli were found 8 times, colonoid 14 times and streptococci 6 times in the period. Sometimes two forms on the same day.

It will also be seen that the infections of the water falls in day groups (May 29, 30, 31, June 13, 14, July 27, 28) and this is what experience in other such water supplies shows. One hundred and twenty-five times out of one hundred and fifty the water was found uninfected. This shows the value of a continued examination always in judging of the possible infections of a water supply. Infection was not found during one whole month. It will be interesting when the end of the year comes and the daily reportings of Typhoid Fever are given out to see whether these periods of infection have any connection with these reportings.

Through the kindness of Mr. Stupart of the Meteorological Service we were furnished with the following record of the velocities and directions of the winds over the period of the examinations:

Direction and Velocity of Wind, 1904.

Month, 1904.	Day.	Direction from.	Velocity in miles per hour.	Month, 1904.	Day.	Direction from.	Velocity in miles per hour.	Month, 1904.	Day.	Direction from.	Velocity in miles per hour.
March ..	20	W	14.1	June....	3	E	3.0	August..	18	NW	10.4
" ..	21	E	19.7	" ..	4	E	6.6	" ..	19	NE	8.8
" ..	22	E	8.4	" ..	5	S	7.0	" ..	20	W	11.0
" ..	23	W	7.8	" ..	6	SW	7.9	" ..	21	SW	7.2
" ..	24	E	16.0	" ..	7	SW	4.2	" ..	22	W	10.0
" ..	25	E & S	5.3	" ..	8	NE	4.3	" ..	23	SE	6.9
" ..	26	W	15.0	" ..	9	E	10.8	" ..	24	S	9.2
" ..	27	W	11.0	" ..	10	NE	11.4	" ..	25	SW	14.6
" ..	28	SW	7.0	" ..	11	NW	5.7	" ..	26	W	9.9
" ..	29	SW & SE	6.4	" ..	12	E	4.7	" ..	27	SW	7.2
" ..	30	E	7.6	" ..	13	E	6.9	" ..	28	SW	7.9
" ..	31	E	21.0	" ..	14	NE	4.3	" ..	29	N	10.8
April	1	NE to W	14.2	" ..	15	W	8.3	" ..	30	N to E	7.2
" ..	2	W	21.5	" ..	16	S	6.2	" ..	31	NE	8.8
" ..	3	W	16.7	" ..	17	S	4.5	Sept	1	NE	4.6
" ..	4	W	12.2	" ..	18	SE	2.5	" ..	2	NE	7.3
" ..	5	SW	7.3	" ..	19	E	9.0	" ..	3	SW	7.6
" ..	6	E	5.8	" ..	20	SE	5.8	" ..	4	SW to S	7.6
" ..	7	W	5.0	" ..	21	SW	5.0	" ..	5	NW	11.2
" ..	8	E	24.4	" ..	22	NW	13.3	" ..	6	NE	7.3
" ..	9	E	8.9	" ..	23	SE	6.1	" ..	7	NE & E	4.9
" ..	10	W	16.9	" ..	24	S	7.0	" ..	8	NE	8.7
" ..	11	SW	10.7	" ..	25	S	11.1	" ..	9	NE	6.3
" ..	12	W	12.5	" ..	25	W	13.6	" ..	10	SE	4.4
" ..	13	W	9.1	" ..	27	NW to S	10.0	" ..	11	S	10.0
" ..	14	W	10.3	" ..	28	NE	8.3	" ..	12	NW	11.0
" ..	15	E	12.3	" ..	29	E	6.1	" ..	18	NE	13.2
" ..	16	W	14.5	" ..	30	S	7.6	" ..	14	E to SW	8.7
" ..	17	SW	14.3	July	1	W	8.8	" ..	15	W	11.0
" ..	18	S	9.2	" ..	2	NW	12.5	" ..	16	SW	12.2
" ..	19	NW	23.5	" ..	3	S	7.8	" ..	17	NW to SE	5.7
" ..	20	NW	27.8	" ..	4	S	11.8	" ..	18	SW	6.7
" ..	21	NW	14.2	" ..	5	SW	5.0	" ..	19	NE	9.5
" ..	22	E	10.5	" ..	6	N to S	3.0	" ..	20	SW	8.9
" ..	23	E	7.1	" ..	7	NE	7.8	" ..	21	NW	9.7
" ..	24	E	6.7	" ..	8	NE	11.0	" ..	22	SW	7.7
" ..	25	NW	13.5	" ..	9	N	4.9	" ..	23	SE	9.7
" ..	26	NE.	11.9	" ..	10	SW	5.3	" ..	24	S	11.7
" ..	27	NE	17.1	" ..	11	SW	4.7	" ..	25	NW	6.8
" ..	28	NE	10.7	" ..	12	W	9.1	" ..	26	N & NW	4.7
" ..	29	NE	6.3	" ..	13	SW	8.2	" ..	27	NE	6.7
" ..	30	NE to S	3.5	" ..	14	SW	7.4	" ..	28	NE	7.8
May	1	SE	4.4	" ..	15	SW	11.3	" ..	29	SW	10.0
" ..	2	E	10.0	" ..	16	NW	9.1	" ..	30	NW	24.4
" ..	3	E	5.5	" ..	17	N & E	3.2	Oetober.	1	W	16.2
" ..	4	S	5.1	" ..	18	W	7.8	" ..	2	W	13.3
" ..	5	SW	6.2	" ..	19	W	9.9	" ..	3	NW	7.7
" ..	6	E	8.4	" ..	20	NW	9.3	" ..	4	NW to SE	4.4
" ..	7	E	5.1	" ..	21	W	7.4	" ..	5	W	10.1
" ..	8	SE	6.4	" ..	22	NE	8.0	" ..	6	NW	10.1
" ..	9	SE to SW	11.6	" ..	23	N	10.0	" ..	7	NE	8.5
" ..	10	W—E	8.6	" ..	24	N	5.5	" ..	8	NE	2.5
" ..	11	W	9.3	" ..	25	SW	5.1	" ..	9	NE	10.0
" ..	12	E	5.8	" ..	26	SW	4.8	" ..	10	NE & S	10.9
" ..	13	E	6.1	" ..	27	S & SW	6.1	" ..	11	NE	8.8
" ..	14	W	5.0	" ..	28	N	3.8	" ..	12	NE	9.2
" ..	15	variable / NSW	4.4	" ..	29	W	7.3	" ..	13	N	7.2
				" ..	30	SW	5.4	" ..	14	W	7.2
" ..	16	SW	6.9	" ..	31	SW	8.7	" ..	15	N to S	5.4
" ..	17	NW to E	4.1	August..	1	SW	6.7	" ..	16	NE	6.0
" ..	18	E	14.1	" ..	2	NW	7.4	" ..	17	NE to S	4.7
" ..	19	S	10.9	" ..	3	S	7.1	" ..	18	W	7.5
" ..	20	NW	8.5	" ..	4	NE	6.5	" ..	19	N	6.1
" ..	21	S	7.3	" ..	5	SW	7.6	" ..	20	SE	7.8
" ..	22	S	7.0	" ..	6	SW	12.7	" ..	21	SW	11.7
" ..	23	S	20.2	" ..	7	W	8.0	" ..	22	SW	16.3
" ..	24	S	2.8	" ..	8	NW	8.3	" ..	23	NW	9.0
" ..	25	N to E	5.8	" ..	9	NE	8.6	" ..	24	SE	10.1
" ..	26	S	12.5	" ..	10	NE to SW	6.0	" ..	25	SW	42.3
" ..	27	W	16.6	" ..	11	NW	9.5	" ..	26	W	11.7
" ..	28	NW to S	8.3	" ..	12	S	5.7	" ..	27	NW	8.7
" ..	29	S	2.8	" ..	13	S	6.1	" ..	28	S	8.0
" ..	30	NW	8.5	" ..	14	W	9.5	" ..	29	W	10.9
" ..	31	E	18.2	" ..	15	SW to NE	4.9	" ..	30	NE	7.0
June.....	1	NE	7.3	" ..	16	NE	4.8	" ..	31	S	7.3
" ..	2	NE	4.5	" ..	17	W	9.3				

It is especially interesting and perhaps suggestive to find by the record that nearly always on the one or two days preceding the infections the wind was either blowing from the north-west, north-east or directly from the east. The intake of the Toronto water system is situated out from the south-western extremity of Toronto Island. The sewers of Toronto empty without treatment their contents either into Toronto Bay or into the lake, where the city has extended beyond the limits of the north shore of this bay.

The bay has two outlets into the lake, one the Eastern Gap at the extreme south-east corner, the other the Western Gap at the extreme north-west corner of the same.

The winds control the currents that are found in this bay to a very large extent. For instance, according to Capt. Hall, of the Harbor Service, with a change of direction in the wind the water level at one end or the other of the bay may in extreme cases vary as much as one foot from the noraml of that day. A difference of three or four inches is quite a daily occurrence. The importance of this can be easily appreciated on a little reflection in its effect on what will pass out of either of the Gaps according to the direction of the wind. It is a matter of common observation that when the current is inward by the Western Gap it is outward by the Eastern Gap or vice versa; and this current is of no inconsiderable importance when it is appreciated that it is frequently at the rate of 2 or 3 miles velocity per hour.

During an investigation of some years ago Prof. Mackenzie informs me that on one accasion he found by tracing a current from the Eastern Gap directly south out into the lake by bacterial counts and chemical analyses he found sewage to pass almost unchanged to a distance of nearly one and a half miles south of the southern most shore of Toronto Island.

On one occasion during the last summer during the continuance of a wind from the north-west a direct grossly observable stream of sewage from the Garrison Creek sewer was observed to flow over the position of the mouth of the Toronto intake. These streams of sewage have been observed in other places than Toronto, especially in Chicago. There the sewers at one time emptied into Lake Michigan one section after the other on the shore running more or less north and south. It was often observed that when the wind had been blowing from the east for sometime and dammed the sewage back into the sewers that when it ceased a stream from each sewer mouth could be traced as much as five miles out into the lake, the characteristic color of the sewage indicating the location of the streams.

It is a matter of common observation on the south shore of Toronto Island that the currents vary from east to west affected by the winds. There are deep and surface currents of course also, and often these are in opposite directions. In explanation of this variation in current account of the winds is taken into consideration. It has been found that when the wind has been blowing for some time from an easterly direction and presumably crowds the water up into the western end of the lake that when the wind ceases the water comes back showing as a current in an easterly direction, and vice versa.

The intake pipe's mouth is said to be at a depth of 50 feet below the surface, but this is not a guarantee against surface pollution for it has been found in Lake Ontario that water as far down at 80 feet where the temperature is usually about 35° or 36° F is at times as warm as 60° F. Surface warmed water only could have given rise to this phenomenon.

Again the average chlorine in Toronto water is 7 per 1,000,000. At Mimico it is 5.5. At Scarboro Heights it is 4.5. This extra chlorine is most likely of sewage origin.

When the situation of the sewers, the position of the Eastern and West-

en Gaps and the variations of the currents in the bay and lake as affected by the winds are taken into consideration it seems at least justifiable to suspect that the infection of Toronto water is at the intake, especially when we consider that it is periodic. It perhaps speaks well for the new steel conduit's tightness.

Typhoid Fever Outbreak in Hamilton.

Toronto, Nov. 9, 1904.

In June and July of this year an outbreak of Typhoid Fever took place in Hamilton that was rather interesting. In all there were thirty cases. All but four of these cases were inmates of the General Hospital, the Hospital for Infectious Disease and the House of Refuge. The four exceptions were in one locality of the city. There was no Typhoid Fever at this time in any other part of the city. All of these cases were supplied with milk from the same dairy.

It could hardly be due to the city water for there was no other typhoid in the city.

The vegetables used in these institutions could hardly have been the cause for these are bought at the open city market and from whoever can supply them and not in large quantities, and still the general public did not suffer. The milk supply seems to be the only thing that could account for the wide distribution. The milk is supplied by the one man. Those outside of the hospitals and Home of Refuge attacked were those only who had used this one milk. A policeman whose beat was in the neighborhoor of the House of Refuge used to go in a couple of times a day for a drink of milk. The engineer though eating at home got milk from the Home to drink during the day. He had typhoid fever. The milk cans are brought to the hospitals and poured out of doors into the hospital cans. It could not be discovered that any cans had even been taken into the hospital and left there. Then again there were three distinct outbreaks during the general outbreak. On consulting the Meteorological records for Hamilton it was found that there were very heavy rain storms of some duration on June 1st and 2nd again on June 21st and 24th, and as far as could be gathered from the people about somewhere around the 13th of July another heavy storm took place.

Record of Rain During May and June.

May 1st and 2nd—Light rain.
May 9th—Heavy rain.
May 10th and 11th—Light rain.
May 14th—Light rain.
May 15th—Heavy rain, with thunder storm and hail.
May 16th—Light rain.
May 19th—Heavy rain, almost unprecedented fall 2½ inches.
May 23rd—Average rain.
May 26th—Light rain.
May 27th—Heavy rain.
May 30th—Heavy rain.
May 31st—Exceedingly heavy rain, 1 inch.
June 1st—Very heavy rain.
June 2nd—Very heavy rain.
June 8th—Average rain.
June 9th—Heavy rain.
June 20th—Light rain.

June 21st—Heavy rain.
June 24th—Heavy rain.
June 28th—Showery.
June 29th—Showery.
July 1st—Average rain.
July 4th—Average rain.
Records cease at this date owing to illness of Mr. Bland.

Each one of these heavy rains is from 14 to 18 days before each of the 3 outbreak periods of the fever.

On analysis all the waters used in the washing of the cans by this milkman were found to show some chemical pollution and infection with colon bacilli. His wells were so situated that in a heavy rain they could hardly fail to be polluted from the surrounding cattle-trodden lanes, stables and even privies. One of the sources of water was from a big bubbling spring out of the lime-stone, another was from an artesian well drilled 50 feet down into the rock. Ordinarily these waters are clear but after a heavy rain they become quite turbid. On the occasion of my visit to this place a heavy rain had taken place continuously for some ten hours before. The dairyman said the water had been turbid for three hours before. It usually took about seven hours to become so. The turbidity was still present on the following afternoon. One year ago the Public Works Department tried to get water on the plateau on which this farm is for the Hamilton Asylum. The water showed curious pollutions and when the several wells were coupled up and pumped out wells 1½ miles away were dried up.

There was no typhoid on the farm nor had there been any in the neighborhood for three years. Dr. Langrill wrote letters to all the physicians in the district and they informed him so. Our only failure in this investigation was to get the original case.

The disease of the outbreak seemed to be undoubted typhoid fever. There were no deaths though there were several of the cases severe. There were no hemorrhages and yet they had diarrhoea. Many of the cases were only sick 10-15 days. Though several again were sick the full typhoid periods and had relapses even. The Widal reaction test was done in four of the cases. They all were positive. The diazo reaction in the urine was typically present in 13 of the cases. All the other general symptoms of typhoid were present. But we have not found the original cases, perhaps some convalescent.

The evidence was so strong nevertheless against the milk supply that Doctor Langrill, the M. H. O., recalled the license.

Report on the examination of waters gathered on July 29th in company with Dr. Langrill from the springs and wells on the suspected farm south of the City of Hamilton in connection with outbreak of typhoid fever:

Laboratory Numbers.	Where from.	Streptococci.	Staphilococci.	Colon bacilli.	Colonoid bacilli.	Chlorine parts per million.	Remarks.
2261	Spring pool from quiet water at west end of it	none.....	none	present...	.....	10	
2262	Bubbling spring.....	none	none	present...	.....	11	
2264	Spring in field, south of house	none	none	present...	.....	8	
2265	Well in field, south of house accross road	none	none	present...	.....	21	
2266	Well in cow stable	none	none	present...	.....	11	

All of these waters show bacterial infection with an intestinal bacterium the Colon bacillus. All except the spring in the field south of the house show an increase in the normal chlorine content for the district, and this in all probability means pollution from animal sources. All of these waters would be unsafe to wash out milk cans with in the condition in which I found them, and also from the data obtained in these examinations.

Report of Laboratory of Provincial Board of Health for Quarter Ending Septemebr 30th, 1904.

County.		Diphtheretic Swabs.				Tuberculous Sputa.		Typhoid Bloods.		Miscellaneous Specimens.	Waters.		Total number for quarter.
		Release.		Diagnosis.							Chemical.	Bacterial.	
		—		—		—		—					
Algoma	2				1						1	1	3
Brant	2						2			1			3
Bruce	5				1	2	3					3	8
Carleton	4				1	1	2						4
Dufferin	3								2				4
Elgin	5			2	4		3					18	27
Essex	9			1	1	8	5	1	4				20
Frontenac	14	7	17	9	4	17	28	13	11	5		4	115
Grey	10	1	2	1	2	3	5		2			1	17
Haldimand	6			2	1	2	3		3				11
Halton	2						2						2
Hastings	15				2	7	7	2	4	1		4	27
Huron	9			2	1	2	4	1	3			1	14
Kent	10					5	10	1	1			6	23
Lambton	15		1	4	2	5	4		4	1		1	22
Lanark	7		2	3	2	4	5						16
Leeds and Grenville	12					4	7	4	3		1	2	21
Lennox and Addington	13			2	2	6	9	1	5				25
Lincoln	23					3			4	2	1	9	19
Muskoka	12		2	3	3	1	9		1				19
Middlesex	2								1			12	13
Nipissing	3						1		2			12	15
Norfolk	7					2	8	1	1			1	13
Northumberland and Durham	16	1	1	3		6	6	2	4			6	29
Ontario	20				2	6	12		6			8	34
Oxford	12					4	6	6	7	1		11	35
Parry Sound	7			1	4	2	4	1	2				14
Peel	4				1	2	1		3				7
Perth	2										6	11	17
Peterboro	9	3	4	7	9	3	13	1	2				41
Prescott and Russell	0												
Prince Edward	1				1					1			2
Rainy River	1				1								1
Renfrew	10	5	3	2	5	10	11	2	1				39
Simcoe	23		1	2	4	6	12	3	3			3	34
Stormont, Dundas and Glengarry	5			1	1		5						7
Thunder Bay	1											4	4
Victoria	5	2	23	3	8	2			2			6	46
Waterloo	12	1		2	1	2	8		4		6		24
Welland	7			2	1	1		3	1	2			10
Wellington	25	1	2	1	8	16	8	4	4		3		47
Wentworth	7		1			5	4	7	3		4	6	30
York	26	14	16	1 8	25	12	27	45	85	32	1	88	3 63
Totals		35	75	7 1	98	149	235	98	179	45	23	218	1,125

Report on Patent Medicines and Malt Extracts.

By GEO. G. NASMITH, M.A., Ph.D.

The following miscellaneous specimens have been examined for alcohol. Of these, Vin Mariani and Vino don Lorenzo, very largely used as tonic wines, are evidently of high quality. Florida Water, whose use as an alcoholic stimulant is by no means rare, is a dangerous one. A case has been recently reported of the death of six Indians from the effects of a drunken debauch, in which Florida Water was the only stimulant used.

	Alcohol by volume.		Alcohol by Volume.
Vin Mariani	17.35 %	Bay rum	52.70 %
Vino don Lorenzo	16.85	Dr. Agnew's cure for the heart	16.10
Kola Tonic wine	2.10		
Florida water	96.00		

All of the malt extracts obtainable in Toronto have been examined with a view to determining their diastatic and food values. Malt extract is obtained by the evaporation of an infusion of malt, preferably in vacuo and at a low temperature. It should be light in colour, the taste characteristic of malt, and the odour pleasant like that of new bread. The solution in nine parts by weight of water should only be slightly turbid, and should give an abundant precipitate a few minutes after being mixed with an equal quantity of a cold aqueous solution of picric acid.

The diastatic value of malt extract is very variable, depending largely on its method of preparation. Too high a temperature destroys the diastase, such specimens being of little more value than an ordinary syrup. This diastatic power is the feature of greatest importance in malt extract, and is determined by allowing a definite quantity of the malt extract to act upon a fixed quantity of starch mucilage, the end point being determined by iodine. The blue color of the starch with iodine gradually disappears, passing through purple, red, pink, brown and yellow before the end point is reached. In practise about 1.5 gram of the malt extract was allowed to act on, .1 gram of starch mucilage in 100 c.c. of water. Preparations acting on this quantity of starch, and which will not cause the total disappearance of the starch in three hours are condemned as being utterly worthless, in diastatic activity at least. A good preparation will give no yellow colour after acting for half an hour. As acids destroy diastatic activity, and since the contents of the human stomach are usually acid in about half an hour, samples which will not digest a fifteenth of their weight of starch in three hours are little better than honey or other saccharine solutions.

Nine specimens of malt extract manufactured in Ontario and eight of them by brewers, were found to be absolutely without diastatic action, although, without exception, all were claimed to be active. None of them caused the disappearance of the starch after fifteen hours, proving that not even traces of diastase were present. All were dark brown in colour indicating that they had been sterilized by heat, the diastase of necessity being killed in the process. All contained alcohol, were of thin consistency, and contained only from four to sixteen per cent. of solids.

Name of brand.	Alcohol by volume of per cent.	Solution in 9 parts by weight of water.	Diatase present.	Total solids per cent.	Diluted solution + picric acid.
Wyeth	3.50	Turbidity faint	none	12.88	Precipitate none
O'Keefe	7.85	" "	"	6.04	" slight
Pabst	5.50	" "	"	5.22	" none
Walker	7.05	" none	"	9.00	" none
Sleeman	4.95	" faint	"	16.92	" marked
Korman	3.75	" none	"	4.30	" none
Eaton	7.05	" faint	"	5.08	" "
Rheinhardt	6.00	" none	"	5.38	" "
Bott	5.60	" slight	"	5.72	" "

Name of brand	Solution in nine parts water	Total solids (sugar)	Diluted solution + picric acid.	Diatase.	Nitrogen present calculated as protied (Wankl'n method).
Evans & Son	Precipitate	68.60 %	Heavy precipitate	Present	.61 %
Maltine	"	58.77	" "	"	.904
Bynin	Slight opalescence	51.39	" "	"	.88

The only three of the thick malt extracts obtainable proved to be very different from those mentioned above. All were free from alcohol, were pleasant smelling, had characteristic taste and were very actively diastatic. Only one was brown, the other two being quite light colored. These three extracts were compared with Parke Davis taka-diastase.

Name of brand.	Starch digested.	Time for complete digestion.	Weight of extract used.	Comparative activity
Evans & Son	1-10 gram	34 minutes	.1267	5.26
Maltine	1-10 gram	20 "	.2453	4.62
Bynin	1-10 gram	39 "	.5824	1.
Taka-diatase powder	1-10 gram	4 "	.2088	27.70

That is, taking the diastatic activity of the weakest of those examined (Bynin) as one, then Evans and Sons preparation is 5.26 times as active as an equal weight of Bynin. Taka-diastase is approximately thirty times as active as Bynin, weight for weight.

One-fifth of a gram of Taka-diastase will digest one-tenth of a gram of starch completely in four minutes at 40° C. The actual starch reaction disappears, however, almost instantly and the erythro dextrin reaction long before the end of four minutes.

From the above results we conclude that the ordinary thin malt extracts sold in Ontario are to all intents and purposes ordinary beer. Some of them contain more actual solids than beer, but the medicinal qualities of the diastase, for which so much is claimed are entirely lacking. The light coloured thick malt extracts, on the other hand, are all that they are claimed to be, and are actively diastatic, besides containing large quantities of sugars.

Consumption Cures.

A beginning has been made at the analysis of consumption cures, so-called.

Psychine contains: Alcohol, Glycerine, Oil of Cloves, or closely allied oil and a bitter almost certainly Calumba.

Hoofland's Consumption Cure: Glucose and Tar water or oil of White Pine.

Bynohypophosphites (Allen & Hanbury): Phosphates, Hypophosphites, Malt extract, Iron, Calcuim and Potassium, Strychnine and Sinchona alkaloids—Formula on bottle correct.

Reservoir, Muskoka Hotel, built of stone and concrete.

Report on the Sanitary Conditions of the Muskoka and Kawartha Lakes District.

By CHAS. A. HODGETTS, M.D., and JOHN A. AMYOT, M.D.

The growing importance of the lake districts, as a health resort during the summer months for the thousands of Canadian as well as American tourists, who seek these regions to regain health or repair their constitutions after a year's residence in crowded cities and towns, where incessant toil both mental and physical combined with the carking cares of life compel them in the heat of summer to seek the invigorating air and the quiet repose, which nature has provided so bountifully in the lakes of the Highlands of Ontario, calls for the most earnest consideration of the Board, for if this portion of the Province is to be preserved for the purpose for which nature intended it. The summer Health Resort of the American continent, a place "where every prospect pleases and only man is vile," then rules of a preventative character must be enforced to conserve in perpetuity this inheritance which may well be the envy of others not so blessed.

The object to be obtained is the conserving of the waters of the lakes and streams, which in their natural state are potable, so that the minimum amount of pollution shall take place from the hotel, the summer home, the farm of the settler, the steamers plying the lakes and lastly and most important, the towns and villages situated on the shores of the rivers and lakes.

Topography. The districts reported on are situated to the east of the Georgian Bay and north of Lake Ontario. The Kawartha chain lying a little to the south-east of the Muskoka group both, however, being pretty nearly at the same altitude above the sea—the relative heights being as follows:—

Muskoka Group.		*Kawartha Group.*	
Lake Joseph	748	Buckhorn	805
Mukoka Lake	745	Cameron Lake	835
Rosseau Lake	748	Chemong Lake	805
		Lakefield	770
		Stoney Lake	768

Their relative altitude to three chief cities of the Province is as follows:

Toronto, City Hall	296
Hamilton, City Hall	323
Ottawa, City Hall	247

Another interesting fact should be noticed that these lakes are situated at the altitude given by Humboldt, as the average for North America, viz.,—748 feet, but over 400 feet higher than the average he gives for Canada 300 feet.

It will thus be seen that the Kawartha lakes are situated at a higher altitude than are those of the Muskoka Group which are nearer the great lakes.

The Geological Formation. The islands and shores of the Lakes of Muskoka are composed mainly of gneiss and granite scantily covered here and there with soil, the composition of which is chiefly granite sand and vegetable matter. There are, however, places along the mainland where the earth is of considerable depth and capable of cultivation, particularly is this the case on the west shore of Lake Muskoka.

Municipal Relationship. The lakes themselves lie within the boundaries of different municipalities, the Muskoka Lakes, being situated in the following townships: Humphrey, Cardwell, Medora, Watt, Wood, Monck, Muskoka, with the following towns, Gravenhurst at the southern extremity of Lake Muskoka, and Bracebridge on the Muskoka River. The

Kawartha Lakes lying in the Townships of Bexley, Somerville, Fenlon, Vrulaur, Harvey, Ennismore, Smith, Burleigh, Druro, Dummer, and the following incorporated towns thereon; Fenelon Falls, Bobcaygeon, Lindsay and Lakefield.

The shores and islands of Stoney Lake of the Kawartha Group more nearly similate those of Muskoka than any of the others of this District, lime-stone appearing in place of the gneiss in some places. The shores of the remaining lakes are of a gravelly nature with here and there clay and lime-stone formation, while some of the rivers are marshy owing to the banks being, in many instances, drowned lands.

Character of the Waters. The waters of both these groups are potable, the Muskoka waters being darker in color and softer than those of the Kawartha Lakes.

Conditions. Owing to the work done in the Muskoka Lakes by Dr. Bryce for several years past, and the satisfactory evidences found on every hand of the good results accruing therefrom, it would seem best to describe the present condition of the hotels and private houses of the two districts under separate headings.

Summer Population. The estimated daily summer population of the hotels on the Muskoka Lakes is between 5,000 and 6,000, while that of the private residences must not be far short of that number, indeed often it must exceed it.

Pollution by Householders. We found that many of the summer residents drew their water from the same bay or locality into which the closets drained, and the kitchen slops ultimately found their way, and we are of opinion that as most of these residences make no provision either for the treatment of the sewage or are supplied with dry earth closets, that the greatest source of danger at present existing in this district is from the residences themselves and it behoves the owners to initiate some system to prevent the pollution which is of so wide-spread a character.

Hotels. The majority of the hotels on the other hand, have instituted, in many instances have for some years, disposal of their sewage, by means of a septic tank and sub-surface tiles, and certainly from the provision already made by the hotel proprietors a great danger which hitherto existed has been materially diminished although much work remains yet to be done. We would particularly note that for some years the septic tank has been in use at the Monteith House, Rosseau, and Prescott House, Port Sandfield. Photograph of the latter being appended. In both cases the proprietors report with most satisfactory results.

Through the kindness of Mr. Cockburn of the Muskoka Navigation Company, we were enabled to inspect the septic tanks, which have been in use for two seasons on the S. S. Medora and Nipissing made on the recommendation of Dr. Bryce. We are pleased to state that both Mr. Cockburn and the Captain stated that this year there has not been a complaint regarding their working, but on the contrary they have given every satisfaction. The tanks are only in use on two of the seven vessels of the fleet, the smaller ones five in number not having any such provision and no precautions are taken in the emptying of closets and urinals, or of the kitchen waste.

The following is a summary of the present condition of the Muskoka Summer Hotels, as far as inspected some thirty-two in all.

Septic Tank and Tiles	11
Septic Tank and Filter	1
Cesspool	2
Closets (outside) or earth closets	18
Water Supply. (a) From Lake	29
From Well	1
From Springs	2

The hotels having the septic tank installed were distributed as follows:—

Lake Rosseau	6
Lake Joseph	2
Indian River	2
Lake Muskoka	1

and one each on Rosseau and Indian River, had cesspool only. While the hotel with supposed filter system is situated on Lake Joseph.

Of these hotels having the septic tank installed, we found that in one case the proprietor had blocked up the automatic flush valve, so that the sewage passed directly through the tank into the tiles, which as a consequence had become blocked up, and that which otherwise should have "blossomed like a rose" had become a nuisance. A good instance of how want of intelligence in the proper supervision of the system results in the condemnation of what, under other management, is a success.

The instance where the effluent was being discharged on to filter beds was not showing as good results as could be desired, indeed the odor was quite noticeable and disagreeable. At one hotel where the proprietor stated he had put in a septic tank on recommendation of Dr. Bryce, but found it did not work he had somewhat inadvisably piped the sewer to a considerable distance back of the hotel to a low piece of ground, and here we found the sewage simply flowing over the land, with cattle pasturing in the same field. In this case we consider the disposal should be by sub-surface tiles, and the earth closets in the rear of the hotel should be done away with.

The changes are much needed here owing to the fact that upon the same island, there is a large population in some 25 cottages upon which large sums of money have been spent. The sanitary arrangement of these will be referred to later.

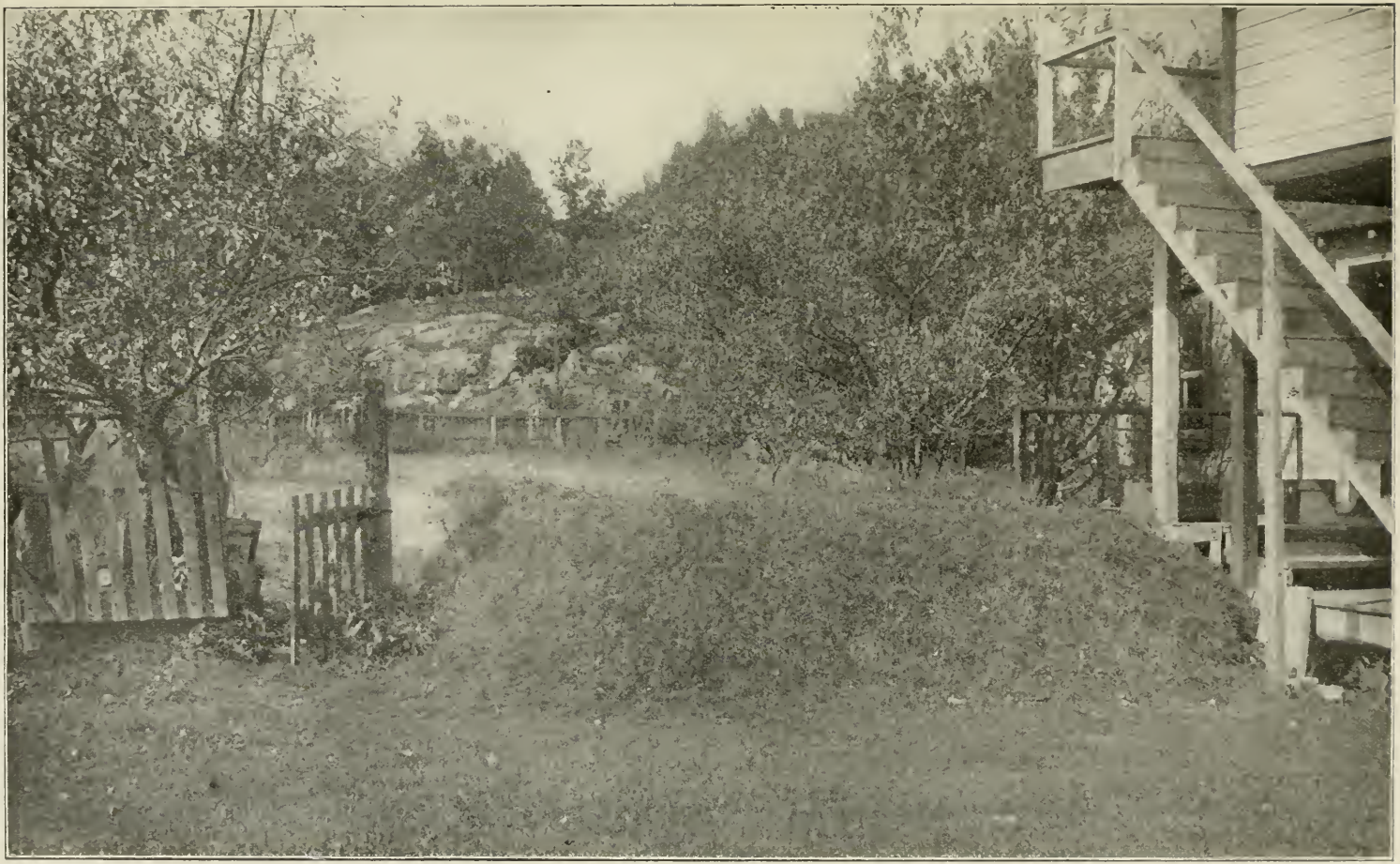
In case of two of the cesspools, steps should be taken to require the use of underground tiles, for under the present system there is no way of determining what ultimately becomes of the effluent and it was just possible it found its way into the lake not far from the intake pipe supplying the hotel with water.

As to the cesspools and earth closets, we found that the condition of the former, was far from satisfactory, and to mention them, is but to condemn their use. Many of the earth closets were, however, kept in a good sanitary condition, while some were found to be lacking in careful and periodic removal of the excreta, and were so placed that every rain storm washed a portion of their contents into the waters of the lakes.

Water Supplies. From the above summary it will be seen that 29 of the hotels derive their water supply from the lakes. In most instances both hot air engines and wind mills are used to pump the water into tanks placed at a convenient distance from the buildings, and at such a height as to supply each flat in the hotel. The former method of pumping the water is a very simple and convenient one, easily operated and doubtless it is destined to come more into general use, and for hotel purposes will probably supplant the wind mill.

As to the source of the supply of waters, we found generally speaking the intake is placed at a point where the water is least likely to become contaminated with sewage. In one instance, however, such was not the case, and the offender being the largest hotel in the district, we deem it of sufficient importance to refer to it.

The large laundries and other outbuildings are situated to the rear of the hotel, and the drain apparently carries the slops, etc., into the bay at the foot of the rock upon which these buildings are erected: and further, the intake pipe is situated in the same bay. Again a wooden, septic tank is situated close by, which we are of the opinion is not working



Septic Tank covered with sod, showing garden in rear irrigated by effluent.

satisfactorily, and the sewage from which may possibly find its way into the same bay, should anything unfortunately go wrong with the system—a contingency which must be provided for, disastrous results might follow in an outbreak of enteric fever or diarrhoea amongst the guests—and we would recommend that changes be made to remedy the same.

The procuring of water from wells in this district, does not appear to us desirable, as the source of the water is uncertain, and the possibility of contamination great. We would recommend the repeated examination of all well waters that the authorities may be assured of their purity.

The great care which an hotel proprietor will take to protect his water supply from contamination was noticed at Rosseau, where the Monteith House is supplied with spring water, some twelve acres of land having been purchased by the proprietor, with a view of preventing contamination anywhere in the gathering ground.

In comparison to this we found the other hotel which derives its supply of water from a creek, had upon its own premises closets and a barn, both above the point in the creek from which the water is taken.

Regarding the sanitary conveniences provided in the hotels, we are pleased to state that in many instances the lavatory accommodation was of the best —no money being spared in the securing of the latest and best style of closets, urinals and wash basins. While in some instances the bathroom conveniences equalled those of many private houses—and what is of still greater importance, the plumbing work was good.

Private Residences. Time did not permit the examination of each residence, for upon the chain of lakes there are more than three hundred, but from personal examination and enquiry, we found that fifteen of the summer residences have installed as a system of drainage, the septic tank and sub-surface tiles, three we know definitely have house plumbing with cesspool, and two plumbing only,—the untreated sewage being run directly into the lake, and a complaint was lodged with us regarding one of these.

We examined the premises of twelve residences close to Beaumaris, and found that the owner of one of these had, at apparently considerable expense, installed what is known as the "Waring System", this had been in use some two years. The distribution of the tank effluent is by means of iron pipes and laterals placed here and there, from which the liquid flows over the rocks and surrounding soil, where it is either absorbed or evaporated—in any case there is a possibility of a nuisance being created at points where the sewage accumulates and septic action takes place—and again the distributing pipes being of iron, will not last as long as tiles, and the sub-surface distribution is in our opinion, preferable. Some nine others have built apparently cesspools but have not provided in a satisfactory manner for the disposal of the effluent, which it is possible to do at additional small expense, as the soil is suitable for the use of tiles. We would, however, commend the good work done by the residents at Beaumaris in the disposal of their sewage, and wish we could speak as favorably of those residing in the other sections of the district.

The general principles followed in the disposal of human excreta, where no such system as referred to above has been adopted, are either the pit, or dry earth—and the care taken to dispose of the contents of the pit or box, varies with the attention given to it by the householder—some are careful, many are indifferent, but we find evidence of some attention being given to sanitation.

Private Water Supplies. The chief source of supply are the waters of the lakes, and instances were noticed where the closets drained into the same bay from which the water supply was taken.

Permanent Residents. We found that this class of residents has done little or nothing to prevent contamination of the waters of the lakes—this applies to the isolated farm house as well as to the hamlet, village and town. As a rule the farmer's barn yard drains towards the lake—his closets which are used all the year around are similarly situated—and it is the same with such hamlets and towns as Bala, Rosseau, Windemere, Port Carling and Gravenhurst. (Bracebridge was not visited.)

Hamlets and Towns. Regarding the latter place Gravenhurst which is the port of entry for most of the tourists, the town presents anything but a pleasing picture as regards sewage disposal and water supply. One of the principal hotels derives its water supply from a well situated in the centre of the yard at the back, and around it are grouped barns, driving sheds, closets (the only ones on the premises), and a wooden tank into which is run the kitchen slops, etc.

Sanatorium. We were kindly shown in this institution by Dr. Elliott, the superintendent. The water supply is taken from a point several hundred feet from shore, and pumped to a tank with a capacity of 5,000 gallons. At the time of our visit some obstruction had occurred in the intake.

The sewage from the main building is run into a tank 9x9x10 feet and the overflow from this is carried to a creek at the rear of the Sanatorium, which creek runs into the lake at a point about a quarter of a mile distant.

The so-called free Sanatorium is provided with a septic tank and sub-surface tiles for the distribution of the effluent.

The Kawartha District.

In contrast with the Muskoka District it will be seen that little or nothing has been done either by hotel proprietors or summer residents looking to a more systematic disposal of excreta and house waste although the action taken by the residents at Sturgeon Point in securing incorporation and placing their property under the control of a corporation is unique and it is worthy of further consideration as to how far the plan can be introduced in similarly situated resorts.

On this chain of lakes there are more towns and villages than in Muskoka and at places large areas of land are under cultivation—and the natural conditions are somewhat different—many of the summer residences being situated on the banks of the lakes or rivers—the exception being on Stoney Lakes where the beautiful islands are freely dotted over the surface of the lake.

Of the nine hotels inspected we found as follows—four had a system of water-works and ran the sewage into a tank the overflow finding its way into either a gully or the water—the other five had no provision other than a pit or dry earth closet. The water supply in seven instances was from the lake and in the other two it was spring water.

Situated upon the lakes visited are the towns or villages of Coboconk, Fenelon Falls, Lindsay, Bobcaygeon, Bridgenorth—the only one of which has a system of sewerage being that of Lindsay.

The other towns and villages are entirely lacking in the matter either of public water supply or sanitation of closets, or of a system for the disposal of garbage and if it is the desire of these places to uphold the reputation of the district as a health resort it behoves them to at once get to work as municipalities, house clean and institute some system which will make them clean and attractive, a pleasure to every tourist and a delight to themselves.

In addition to towns, villages and hotels examined on the Kawartha Lakes, some 229 private houses came in under our notice, and in most of them the closets were either the ordinary pit, where depth of soil permitted

Septic Tank, Muskoka Hotel. Rear view, showing overflow pipe.

the same being dug or the dry earth system, while a few, the more careless, had the closet placed directly over the water, and in one instance a stream ran through the closet from which it issued in cool crystalline purity? to quench the thirst of the passing tourist.

At Sturgeon Point where there is situated a group of some 80 summer residences, we were informed by the caretaker that the place is incorporated and rules have been drawn up looking to the keeping of the district in a sanitary condition, the house garbage is collected regularly, the closets are all earth closets and are emptied twice a week. The water is supplied chiefly from wells situated on the lake front and sunk in the gravelly bluff on which the cottages stand.

At one point where there are an hotel and 31 houses the situation is not so satisfactory, the hotel with one cesspool allowing a portion of its contents to be absorbed by the earth, and the other to empty itself in the gravel some distance away, and the cottages each with a cesspool, all on an elevation above the springs found on the shore some feet below are a menace to the purity of the same. The sanitary conditions here are in marked contrast to those found at Sturgeon Point, which are simple and inexpensive.

Recommendations. In a report like this it is not our purpose to particularize, that is a matter which must be dealt with separately, generally speaking we would suggest as follows:

Considerable difficulty must always exist in arriving at any uniformity chiefly from the fact that so many Townships Authorities hold jurisdiction over the lakes. With some system which permitted the employment of one sanitary officer, directed by a Local Board of Health, directly interested in maintaining the lakes in the best sanitary condition, much more could be hoped for the future, and where it is at all possible we would advise the securing of incorporation on similar lines to those at Sturgeon Point.

Hotels and Boarding House Sewage. The Hotels and Boarding Houses at present without a system of sewerage consisting of septic tank and subsurface tiles should be required to instal the same.

Earth closets and cesspools should be discontinued, where at present in use in hotels and boarding houses and all closets made to connect with a sewerage and sewage disposal system.

In those cases where the drainage is into a tank without any further land treatment all sewage should be disposed of by sub-surface tiles where practicable.

Water Supply. The intake should be removed as far as possible from the site of the sewage disposal, and certainly where it is impossible to provide for treatment other than by the septic tank, care should be taken to filter the water. This could be done most efficiently and certainly economically by slow sand filters.

Private Houses. Where the conditions will permit householders are recommended to provide the septic tank system, and where a number of houses are adjacent to each other, and the formation is favorable this might be done in a joint system, as for instance at Beaumaris.

Closets overhanging the water must be discontinued at once, and in their place if the septic tank cannot be introduced, either from natural, financial or other reasons, such for instance as the want of a system of waterworks, then the dry earth closet should be substituted, care, however being taken that the same is regularly cleaned out.

Kitchen and Other Slops. These should, in the absence referred to, be run off into a tank or receptacle where septic action could take place and then distributed, preferably by tiles in the land.

Garbage Generally. The accumulation of garbage of all kinds is a matter deserving of careful attention, for nothing becomes an eyesore and a nuisance sooner than an accumulation of vegetable, animal and other waste material, and where it is not possible to arrange for the removal at least bi-weekly of the same, then the regular cremation of such material should be required at least twice a week, and lastly at the end of the season on the closing up of the house.

Public Conveniences. Owing to the large number of summer tourists conveniences for both sexes should be placed at Gravenhurst, Port Carling Port Sandfield, where the traffic is often very much congested. The hotel guests are very much inconvenienced and the proprietors put to unnecessary expense, in the condition things are at present.

Towns and Villages. As the tourist forms considerable of his opinion of a district from the condition of the towns and villages through which he passes, or in which he stops, it behoves the authorities of such municipalities to at once consider ways and means by which to tidy up their streets and lanes, to adopt rules for the collection and disposal of garbage. Where wells are in use they should be periodically cleaned out and the tops so protected as to prevent the possibility of infection from the surrounding surface—and samples should be regularly taken and forwarded to the laboratory for examination.

As barns and stables are often a source of pollution to wells and also become public nuisances—strict inspection should be maintained over them, and when at all possible a system of public water supply and sewerage should be introduced—where such is not feasible then hotels and large houses should adopt the septic tank system for the disposal of sewage. The endeavor of all should be to conserve the good gifts that nature has provided in these two beautiful health resorts, by preventing the pollution of the water and by the economic removal or destruction of all waste material which accumulates consequent on man's temporary habitation of the districts.

Report of Typhoid Fever Outbreak in North Bay.

By CHAS. A. HODGETTS, M.D.

To the Chairman and Members of the Provincial Board of Health of Ontario.

GENTLEMEN,—Upon the receipt of the following information from the Secretary of the Local Board of Health of North Bay, "Almost an epidemic of Typhoid Fever, something like one hundred cases in the municipality," I at once visited the town with a view of ascertaining the exact condition of affairs.

The Town of North Bay is a railway centre and is situated on the north shore of LakeNipissing. For more than a year past there has been a considerable increase to the population of 3,500 by reason of the employment of large bodies of men on the construction of the T. and N. O. Railway, and cases of enteric fever have found their way into the town and some of them also into the wards of the Hospital of the Victorian Order of Nurses, some of these latter having come direct from the construction camps.

The history of the present outbreak begins with a case which happened early in the month of April and died May 27th, after an illness of 33 days. The patient was a banker and had only two or three weeks previously been removed to this office from another town. The mortuary returns for 1903

show that three persons died during that year from the disease after prolonged illness, one a locomotive engineer died in July after 12 weeks illness; a married woman in October after 16 weeks and a clerk, after three months illness, on November 11th.

An examination of the Hospital Register shows that since May 10th, 1904, forty-two cases had been treated, while on September 13th, seventeen of these were then in-patients, five of whom were from the construction camps of the T. and N. O. R. R., the other twelve being residents of the municipality. The three physicians practising in the town kindly furnished me with the names of patients they had attended or were attending. The total number exclusive of those included in the hospital list being 39, which gives a total of eighty-one cases.

At the time of my visit the majority of the cases were under treatment, and I visited twenty-two houses in which there had been forty-one cases. The following is a summary of what was found,—

The cases have occurred mainly in the east and west ends, although several patients have been residents of the central portion of the town, and the last two reported were in this quarter.

Milk Supply. As is customary in a town of this size there is no organized system of milk supply, those who keep cows supplying a few friends in the vicinity of their own homes. The only regular milk dealers that I could learn anything of resided at the Junction and Callendar, and only three cases had happened in families supplied by them. Nine of the households visited owned their own cow and the others secured their supply from eleven other persons, so, it was almost impossible to trace the outbreak to this source.

Water Supply. Turning to this question it was found that the source of supply was as follows: Town water 14, well water 7, outside source 1.

Cesspools. These, on the whole, were not kept in a very good sanitary condition, some were full and running over, in fact the conditions found indicated that the Local Health Authorities neglected to keep a rigid inspection over these household necessities.

Wells. The wells as examined were as a rule not of a great depth, the walls being chiefly of loose stone, and it seemed that most of them were kept filled from the surface and from the proximity of the cesspools it can be readily imagined that pollution could take place from them, not to speak of the great probability of pollution from the adjoining cow sheds and stables, with their accompanying manure heaps.

Town Water. This is pumped from Lake Nipissing to a standpipe back of the town, the capacity of which is 60,000 gallons. To readily understand how pollution of this water could take place one has but to walk along the streets and observe the primative manner in which both kitchen waste, slops, etc., are emptied into open ditches which run to box drains that are intended to carry all liquids, including rain water, towards the lake front where they end in some convenient gulley, and the effluent finds its way like a stream to the lake.

From time to time the local authorities have had ditches made and have constructed box drains, the primary object being to remove the surface water and into these the householders have run slops, etc., while others having installed closets and baths in their houses have, without the direct sanction of the Board of Health, connected their houses with the box drains, particularly is this the case with the proprietors of the hotels, with the result that there has been really a system of sewerage established though without sanction, and one has but to walk along the lake front to be convinced of the fact that this unsanitary condition of affairs exists. Indeed in the town upon one of

the main residential streets I found in one instance an open ditch at the junction of three box drains, acting as a septic tank and floating around in it were considerable fæcal matter, the arising odor can be readily imagined. I learned that many of the houses connected with these drains, and in some of the houses typhoid occurred, and the contents of these drains emptied into Lake Nipissing close to the pumping house of the water system with the intake some 500 feet distant.

It was rather surprising to find that the Canadian Pacific Railway Company had through its engineers made such poor provision for the disposal of the effluent from the closets upon its property, which occupies the whole of the lake front, indeed the plan as carried out reflects little credit upon the officers of the company as viewed from a sanitary standpoint. The effluent supply of the town, and the company should be required to provide for the treatment of the same before they are allowed to run the effluent into the lake. I would therefore recommend that the same be an instruction from this Board.

All of which is respectfully submitted.

CHAS. A. HODGETTS,
Secretary.

Report of Delegates to the International Congress on Tuberculosis

Held in St. Louis Oct. 3, 4, 5, 1904.

By E. E. KITCHEN, M.D., and R. P. BOUCHER, M.D.

To the Members of the Provincial Board of Health.

GENTLEMEN,—Your delegates appointed to visit the American International Anti-Tuberculosis Congress, at St. Louis, on the 3rd, 4th and 5th of October beg leave to submit the following Report:

The Congress was the result of an invitation by Secretary Hay, of the U. S. Government, to the various Countries of North and South America, to discuss the important subject of Tuberculosis, more especially Legislation for the extermination of this dread disease.

Some twelve Governments responded to the call, and as a result, there was a very large and important meeting of leading Sanitarians of the Western Hemisphere. Besides the English language, a few able papers were given by persons, who only had command of the French or Spanish language. The papers and discussions were kept as near the subject under discussion as was possible.

The communicability of Tuberculosis and the Legislative means for its extermination.

After a three days' discussion the following Resolutions were unanimously adopted:

Whereas, The public health is the paramount interest of every state and nation, and upon it depends in a measure, all other interests; and,

Whereas, In American countries it is less safe-guarded than any interest, public, private, personal or property; and,

Whereas, Consumption is the greatest menace, and destructive agent to the public health, its mortality, according to the last United States Census Report, being over 400 a day; and

Whereas, The cause or causes of this disease, and its methods of dissemination are well understood by medical and sanitary scholars; and,

Whereas, It is known to be an infectious and communicable disease, the prevention of which is within the power and scope of sanitary science, and

Whereas, It requires the authority of law, to institute and inforce, the necessary and proper measures of prevention, be it

Resolved, That it is the sense of the American International Congress on Tuberculosis, now in session at St. Louis, Mo., that it is the imperative duty of all civilized Governments to take immediate action for the arrest of the spread of this scourge, and, as far as lies within the power of sanitary science and human endeavour to eradicate it; and, further, That it is the sense of this Congress that every Government should appoint a Commissioner of the Public Health, with a seat in the Cabinet, and give adequate authority and means to accomplish the desired ends in suppressing Tuberculosis; and, further, That each State and Territory of the United States where there exists a State Board of Health,—and in those States where there is no Board of Health, there should be created a Board composed of the ablest sanitarians—authority should be given to such Boards to formulate and enforce a Code of Regulations, for the prevention of the ravages of this fatal scourge.

A special Resolution was offered by the president and passed, That it is the duty of the Government authorities to promote the establishment of and maintenance of state and municipal sanatoria, in which tubercular patients may be isolated from their relatives, and the public, and where they may be placed under suitable conditions for the cure or arrest of the disease.

A Committee was appointed to study in a thorough going way, the following practical questions:

First, What are the best plans for the construction and management of Hospitals, Sanitoria buildings, cottages, tents and other structures for the accommodation of tubercular patients?

Second, What should be the diet of the tubercular patient, especially with reference to the kind and quantity of proteids, fats and carbo-hydrates?

Third, What accessory physical and hygienic measures, may be properly employed, such as sun-bathing, the electric light as a substitute for sunlight, cold-bathing, exercise, special gymnastics, etc.

Fourth, What simple rules of hygiene applicable in the home, may be commended as preventives of tuberculosis?

It was likewise Resolved, That the Chair appoint a Committee, whose duty it shall be to collect from all available sources accurate data, in relation to the several questions above named, and to digest and formulate the same, into a series of recommendations for general circulation.

It was likewise further Resolved, That it is the duty of Health Boards, Health Officers, and all sanitary authorities to report cases of this disease, at least all cases of pulmonary tuberculosis, with other infectious disorders, and to observe the same care as regards disinfection of the premises occupied by persons suffering from this malady as after measles or any other contagious disease; and,

Resolved, That to facilitate the early diagnosis of this disease, it is the duty of every State and Municipality, to provide laboratory facilities, sufficient for its needs, for the microscopic and bacteriological examination of sputum, and,

Resolved, That systematic efforts should be made, for the education of the public in relation to the communicability and curability of tuberculosis, through the circulation of carefully prepared leaflets and other literature; the holding of schools of health, or health conventions; the organization of local and state societies, for the suppression of tuberculosis; special lectures before fraternal asociations, clubs, college students, chatauquas, associations of teachers, clergymen and other bodies of professional men.

Resolved, That in our Hospitals for the Insane, and other hospitals and asylums as well as prisons and almshouses, provision should be made for the isolation of tuberculosis persons.

Likewise a Committee was appointed to investigate the relation between venereal disease and general or local tuberculosis.

The closing Resolutions of the Congress were, That a National Legislative Committee should be appointed, to receive the memorials and resolutions passed by the Committee on Resolutions of this Congress, and to take such measures as to have them properly presented in the Congress of the United States, and the Governments of the Foreign Countries represented in this Congress;

That they be empowered further to confer with the legal representatives of each State, Municipality and even Local Boards of Health, to the advancement of local legislation against the spread of Tuberculosis;

That they be empowered to draft, compile or formulate a copy of a general law, and urge each state, to enact the same, under the authority of this Congress.

The suggestion is made that this Committee be composed of professional men, representing those professions whose judgment will advance the aeration, lighting and sanitation of dwellings, pathology, etc., and that an Honorary Board be formed, to act in conjunction with that from business men's associations, fraternal associations, and others who may aid in this great work.

Further that this Committee appoint in each State one person to act in the formation of like committees, within the State.

Before closing this Report, we would like to state that the International Engineers Association and the Association of the Fraternities, were holding their annual meetings at St. Louis at the same time as the Tuberculosis Congress and representatives from these bodies visited the latter. They asked to be admitted into the Congress, and were accepted, and as they have already done a considerable work in Sanitary Engineering, the providing of hospitals for their tubercular patients, etc., and they are now considering the building of a car for the special transportation of this class of cases. So it was thought that their addition would be of great assistance to the International Anti-Tuberculosis Congress.

All of which is submitted.

E. E. Kitchen,
R. P. Boucher.

Second Report (1904) of the Committee of Epidemics of the Proviucial Board of Health of Ontario.

To the Chairman and Members of the Provincial Board of Health of Ontario.

GENTLEMEN,—Your Committee of Epidemics desires to report to you as to the best means of securing the restriction of venereal diseases in Ontario. This very important question was considered at the Congress of Venereal Diseases held at Frankford, Germany, during the present year. At that congress it was determined to send to every physician a leaflet or slip, in which reference is made to the precautions to be taken by venereal patients, in order to prevent the extension of these diseases to other persons.

During the present year, also, a committee of three was appointed by the President of the Conference of State and Provincial Boards of Health, "To prepare a leaflet that would be acceptable to physicians to give to their patients, setting forth the precautions to be taken by one suffering from a venereal disease, to prevent its communication to others and to make such other suggestions, as it may deem proper," etc. A leaflet and a circular dealing with the question in the way advised have been issued to the committee of the conference of State and Provincial Boards. Your Committee wish to express their obligations to the latter Committee for the valuable suggestions contained in the leaflets and circular, which they have issued. Taking advantage of their labors and supplementing them, with a few additions, your Committee has prepared a circular on the subject of venereal diseases which we think should be issued to the medical profession of this Province, together with two forms of leaflets, which are to be distributed, as occasion may require, to venereal patients by the physicians, and also a statistical form to be used by practising physicians for reporting to this Board quarterly.

The following is the circular which your Committee suggest that you should send to the medical profession of this Province:

DEAR DOCTOR:—The enclosed is an extract from a circular issued recently under the auspices of the Conference of State and Provincial Boards of Health of North America, addressed to medical practitioners.

"The enclosed leaflet is issued in the interest of the prevention of venereal diseases. It is for you to give each patient who consults you suffering from either gonorrhea or syphilis. It has been prepared so as to be concise and in language to be understood by everyone. This, we hope, will cause it to be read by those to whom it is handed. It will introduce the subject of prevention, thus enabling you to give your patient further information of the extent of this scourge.

It is estimated that eighty per cent. of all deaths from pelvic diseases in women are due to gonorrhea. Twenty per cent. of all blindness is due to gonorrheal infection of the newborn. Fifty per cent. of all involuntary childless marriages are caused by gonorrhea of the female organs of generation, of which forty-five per cent. are due to marital infection by men. In this country it is impossible to quote statistics, as they never have been gathered. The committee of fifteen estimated that there were annually 200,000 in New York City alone. In Prussia, where they have more reliable data, it has been estimated that typhoid fever represents a yearly loss of 8,000,000 marks, while the increased expenses and decreased income caused by venereal diseases amount to 90,000,000 marks annually—an amount which exceeds that caused by tuberculosis. But the financial loss is of minor imporance compared with the enormous social changes and consequent social misery.

In view of these startling facts, which indicate the increasing danger to our people, will you not, my dear doctor, aid your Provincial Board of Health in gaining reliable statistics relative to these diseases, by returning to the Secretary *each year* the enclosed blank with every question answered?"

Whatever may be the view taken by practitioners generally as to some of the statistical items given above, there is no doubt that the subject is of great importance, and needs to be strenuously dealt with. With a view to attaining this object, we enclose herewith a statistical blank form, and we trust that you will be good enough to fill in the same yearly, thereby aiding in this work, by giving us the benefit of your valuable experience.

Yours truly,

CHAS. A. HODGETTS,
Secretary Provincial Board of Health.

The following is a statistical form, which may be used by physicians in reporting venereal diseases to the Provincial Board of Health:

Cases of	Gonorrhea.	Venereal Sores.	Syphilis. Secondary Tertiary
Male.			
Female.			
Married.			
With children.			
Without children.			
Average duration of disease,			

The following is the circular of information for the use of patients, adopted by the Conference of State and Provincial Boards of Health, modified and issued by the Provincial Board of Health, Ontario.

Circular of Information Adopted by the Conference of State and Provincial Boards of Health, and Issued in Modified Form by the Board of Health of the Province of Ontario.

We hand you this leaflet believing that you would not willingly communicate your disease to some innocent person.

Many fail to comprehend the exceedingly disastrous results that often follow venereal diseases. Many cases of blindness, complete disability, and not infrequently death result from them. Gonorrhea is one of the most frequent causes of diseases peculiar to women. So serious a menace have these diseases become to the public health that the medical profession and sanitarians in all countries have become alarmed, and are advocating measures for their prevention.

Syphilis (or Pox) is especially a disease from which innocent persons may suffer, as it usually produces sores in the mouth or on the lips, hence may be conveyed by kissing, drinking from the same cup, or using anything which has been put to the lips or into the mouth of one affected by the disease.

A venereal disease is often communicated when the patient thinks he has recovered. Hence a marriage contracted before the patient is cured of his disease may result in much unhappiness, and often in the death of the wife. To protect yourself and others, we earnestly advise the following:

Gonorrhea.

1. Follow strictly the advice of your doctor.
2. Wash your hands in soap and water after handling the private parts.
3. Do not have intercourse, and avoid sexual excitement until your doctor says you are cured. Do not rub your eyes with your fingers.
4. Always use a separate towel. Burn all cloths or cotton soiled by discharges.

N.B.—Chronic gonorrhea may prove infectious after many years; and the patient should remain under treatment until cured.

Syphilis.

1. Follow strictly the advice of your doctor.
2. Remember that it takes a long time to entirely recover. Secondary and tertiary syphilis injure the patient's health and may prove infectious to others long after the disappearance of primary symptoms. Treatment should be continued and precautions taken against infecting others, as long as the physician thinks necessary.

3. Wash your hands in soap and water after handling the private parts or any venereal sore or eruption on the body.

4. Do not allow any person to use any cup, glass, spoon, fork or anything you have put into your mouth, until the same have been sterilized in boiling water.

5. Do not kiss anyone, or wipe the face of a child with a handkerchief you have used.

All of which is respectfully submitted.

J. J. Cassidy.
Wm. Oldright.
Chas. A. Hodgetts.

Reports of the Committee on Sewage

Presented and Approved at the Special Meeting held in the Town of Collingwood, Aug. 4th, 1904, and at the Quarterly Meeting of the Board held in the City of Toronto, Nov. 10th to 12th, 1904.

Report No. XII., 1904, of the Committee on Sewerage, re the Collingwood System.

To the Chairman and Members of the Provincial Board of Health:

Gentlemen,—Your Committee begs leave to report as follows:

You are aware this Board received a deputation from the Town of Collingwood, consisting of Daniel Wilson, Mayor; R. Burdett, Chairman of Board of Works; Dr. D. McKay, M.H.O.; and D. Williams, Chairman of Board of Health, at the quarterly meeting held in Sarnia, in July last, at which time certain information was received, and additional information was asked for, regarding the plans submitted to the Board of the Sewerage System of the town.

The replies received from Dr. McKay, Medical Health Officer, being appended as exhibit "B."

After the receipt of this information the Board was convened in Collingwood, and was met by the aforementioned gentlemen, and Thomas Bassitt, Supt. of Water Works and Electric Light; Robt. Hughes, Inspector of Harbor Improvements; D. C. Barr, Chairman of Town Projects; and John Mann, Councillor; R. E. Fair, Chairman of Printing and License Committee, and P. W. Bell, of the Board of Health, and were taken out in a tug to view the harbor—the locality of the intake pipe, the "Hen and Chickens," and in general the whole waterfront which has any connection with the problem on hand. We were also taken over the portion of the town necessary to enable us to understand the topographical conditions, visiting en route the localities of the proposed outfalls, and the premises of the two principal industries which might be expected to add more largely to the organic constituents of the sewage, viz.: The Collingwood Meat Packing Company, (Limited), and Mr. Toby's tannery.

Such details of these visits as we think will be of interest to you, will be found in exhibit "C."

As a result we have now to report upon the general system of sewerage according to the plan submitted to us before and at the Sarnia meeting, together with the conditions arising from the two industries named, which were not considered in the plans referred to. We will therefore deal first with the system of sewerage then laid down, and would recommend that the Board give its approval to the system proposed, with the proviso that the sewage before being discharged into the harbor be run into a septic tank, or tanks, properly constructed, so as to hold the average flow for 24 hours. This tankage may, however, be constructed pari passu with the areas of the town sewered.

It should also be understood that in the event of its being found necessary, on account of the conditions of the water supply, or for other reasons, to further purify the effluent, that this should be done by the Corporation of the Town of Collingwood, but we are of the opinion that this will not be necessary at least for many years to come, if ever.

It should be understood that the present conditions of discharging the sewage into the harbor at the foot of Hurontario St. without efficient treatment of the effluent must be discontinued. Also that the usual proviso of the Board be observed, viz.: That all person connecting with the sewers must conform to a proper system of plumbing regulations.

With regard to the Collingwood Meat Company, (Limited), we are of the opinion that it is creating a nuisance, and the Company should be required to provide for a similar purification of the sewage (as that now required of the town) which it is discharging into the western portion of the harbor. The details of the amount and composition of this will be found in exhibit "D."

We found that the Toby Tannery is also discharging an effluent into a marshy locality in the eastern part of the town. In driving through this locality we perceived a very offensive odor. The effluent from this, too, should be purified.

Respectfully submitted,

(Signed), Wm. Oldright.
A. Thompson, Sr.
C. A. Hodgetts.

Exhibit "B."

Answers to Questions re Sewerage System, Town of Collingwood.

1. Area of Harbor? 300 acres. (Government estimate).
2. Estimated amount of water it contains? 730,000,000 gallons.
3. State if stagnant? No. On the calmest days there is a certain movement of the water; in windy weather considerable.
4. State if shore front has good depth of water? The water front on the harbor from Birch St. (the proposed outlet of sewer) east, has a good depth west and north of Birch St.; there is the ordinary sloping sand shore.
5. Direction of prevailing winds? Since the 8th of August, 1903, the wind has been in the following directions: N.W., 92 times: S.W., 74 times; S.E., 69 times; W., 59 times; E., 35 times; S., 29 times; N., 24 times; N.E., 23 times.
6. Drift of sewage? Shallow and deep floats in different locations and at different times, with fresh and also moderate winds, in each instance went in the direction of the wind.
7. The depth of intake pipe? 14 feet.
8. Any leaks in pipe? No.
9. State if possible to put in filter at Hen and Chickens? Yes.
10. Present and prospective population? Population in 1894 was 5,116. Population in 1904 is 6,840. This indicates a gradual growth, and might be taken as the prospective increase in the next ten years. This would give population in 1914 to be 8,564.

11. *Factories?*	*Location?*	*Drainage?*
1. Packing House.	Harbor St.	Into harbor (no solids).
2. Charlton Saw Mill Co.	High St.	Into harbor.
3. Wilson Bros. (planing mill).	First St.	Into harbor.
4. Furniture Factory.	Maple St.	Into harbor.
5. Cramp Steel Co.	High St.	Into harbor through Black Ash Creek.
6. Peterman's factory (planing mill).	Birch St.	
7. Bryan M'f'g. Co. (planing mill).	Minnesota St.	Into harbor.
8. Wire and Nail Co.	Harbor St. (building).	Into harbor.

The last five are merely surface drainage.

(Signed) Donald McKay.

Collingwood, July 28th, 1904.

Exhibit "C."

Statement re The Collingwood Meat Co.s' Works and Toby Tannery.

An examination of the premises of the Collingwood Meat Co., (Limited), was made on August 10th and 11th. On the first occasion the works were not in operation, and as a consequence an opportunity was given for a careful examination into the more minute details of the constructive arrangement of the works and the various methods adopted in the treatment of both the animals and carcases.

On the morning of the 11th inst. slaughtering was in progress, and your committee followed the process through the various stages, and had the same fully explained by Mr. Enright, manager of the works, and it affords your committee much pleasure to testify to the manner in which the various portions of the carcases of the hogs are dealt with from a sanitary standpoint, during the process of killing and dressing.

From the information received, it is apparent that the sewage of the works is equivalent daily, to that of at least 600 persons, and is composed chiefly of the contents of the stomach and intestines of the hogs, the floor washings, the excrement from the pens well diluted with water, which is chiefly derived from the water pumped on the premises. The quantity, judging from the pumping capacity of the engine in use, would be in the neighborhood of 24,000 gallons per hour. This is not reckoning the amount of town water consumed.

The bulk of the sewage at present finds its exit from the buildings by means of a box drain, which empties into the marsh at the western end of the harbor close to the road leading from the town to the works. Some little, however, is run from the back of the pens into the marsh in that vicinity.

The exact amount of sewage discharged, an examination at the opening of the box drain would soon determine.

In regard to Mr. Toby's tannery, situated at the eastern end of the town, an examination of the premises was made with a view of ascertaining the nature of the process there employed, and judging of the quantity and character of the effluent which is supposed to find its way into the marsh in the immediate vicinity of the works, through a box drain. The daily outflow was found to be about 6,000 gallons. In addition are the washings, which at present find their way into the marsh at the back of the tannery.

Report No. 13, 1904, of the Committee on Sewerage re Palmerston System.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—Your committee begs to report, having considered the proposed system of sewerage for the Town of Palmerston, as planned by Mr. J. Galt, C.E., and the report thereon as submitted by one of its members, appendix "A."

Your committee does not look with favor on the scheme as outlined, particularly as regards the system being for surface water only, as too often advantage is taken by householders to connect closets and cesspools therewith.

Again, storm water often becomes a source of considerable nuisance, containing as it does a large percentage of the organic matter of ordinary town sewage.

Your committee would recommend that the recommendation contained in appendix "A." be approved.

All of which is respectfully submitted.

WM. OLDRIGHT.
ALEX. THOMPSON.
CHAS. A. HODGETTS.

Report on the Sewerage System for the Town of Palmerston, being Appendix "A."

By CHAS. A. HODGETTS, M.D.

To the Members of the Committee on Sewerage:

GENTLEMEN,—The plans and specifications as submitted by Mr. John Gault, C.E.M.E., for the sewerage of the Town of Palmerston, provide for the laying of sewers on Main Street from Queen to James, and on William from Main to John, the intention being to use the same solely for "the carrying away of storm water and cellar drainage."

Further, the plans provide for an outlet to the south of the town into a ditch which is at present used for the carrying away of surface (?) water.

I have gone over the ground in company with Dr. Stewart, the Chairman and Secretary of the Local Board of Health, and find that the plan, so far as the running of the sewer is concerned, is good.

But two difficulties are met with: The first is the proposition to use the drains to carry off "storm water and cellar drainage," and the second is to place the outlet in the manner indicated.

Regarding the first objection, in theory the plan is correct, but it is found in practice that the public, sooner or later, connect with even box drains, and often with open ditches for the purpose of carrying away general kitchen waste and excreta. Indeed so common is the practice that it has become a general nuisance, and the severest by-laws when strictly enforced fail often to prevent it.

I am convinced that to approve of the plan in this particular, as suggested by the Engineer, would be to leave the way open for the creation of a nuisance in the immediate vicinity of the outlet, which would in the near future jeopardize the lives of many from pollution of neighboring wells, as well as by the effluvia which would necessarily arise. The question of outlet has to be considered from two standpoints, viz., (a) the plan proposed, and (b) the disposal of sewage generally.

(a) If used for "storm water and cellar drainage" I do not think that from the sanitary standpoint the effluent would be carried far enough from the town, and further it would require considerably more ditching to carry it off.

(b). For the disposal of the sewage there should be provision made for the construction at the outset of septic tank accommodation, which could be enlarged as the system was extended, and further, the municipality should be required to provide for the treatment of the effluent on so efficient and economical plan suggested by the Engineer and approved of by the Board.

All of which is respectfully submitted.

Sgd., Chas. A. Hodgetts.

Report No. 14, 1904, of the Committee on Sewerage re the Wiarton System.

To the Chairman and Members of the Provincial Board of Health:

Gentlemen,—Your committee having examined the plans and specifications of this system, as proposed by Mr. McDowell, C.E., and also considered the report of one of its members, which suggests certain alterations and additions to the plans as submitted, would recommend that the system as amended by said report be approved, subject to the following provisos:

1. That should it be found at any time that pollution of the waters of Colpoy's Bay contaminates the water supply, that the municipality shall be prepared to provide for some further treatment of the sewage.

2. That the Corporation of the Town of Wiarton shall adopt a set of plumbing by-laws similar to the Model Plumbing By-laws approved by this Board.

All of which is respectfully submitted.

Wm. Oldright.
Alex. Thompson.
Chas. A. Hodgetts.

Report on the Proposed System of Sewerage for the Town of Wiarton.

By CHAS. A. HODGETTS, M.D.

To the Chairman and Members of the Committee on Sewerage:

Gentlemen,—The Town of Wiarton is situated at the western extremity of Colpoy's Bay, one of the arms of the Georgian Bay. The present population is about 3,000. The main portion of the town includes the business street, (Berford), to Frank St., lies at the foot of a limestone ridge, which rises to some 89 feet above the lake front. At the northerly end of it is .89 feet in a little less than 500 feet, and George St. 1200 feet to the south, it is 89.5 in less than 2,000 feet, while at the southerly limit of Berford St. it is 111.3 ft. above the lake level.

The character of the land just referred to is sand and gravel; while the portion of the town situated on the hill, a part of which it is proposed in the near future to drain, occupies a narrow ridge which in places falls rapidly away to the west.

The manufacturing interests of the town are as follows:

3 Saw Mills—situated on the harbor front. 1 Flour Mill. 1 Table Factory. 1 Chair Factory. 1 General Furniture Factory. 1 Woollen Mill.

None of which have sewage calling for any special mention.

At present there are several box drains which carry sewage away from hotels or private houses, and empty into the harbor.

The plan for the sewerage of the town as submitted by R. McDowall, Esq., C.E., is briefly, to lay sewers on the following streets: Brown, Claude, Berford, Gould, McNaughton and Dawson streets, also, May, Frank, George, William and Division, and discharge it by two outlets, viz., one at the junction of William and Brown Sts., and the other at the foot of Division St. In addition to this it is proposed to drain the portion east of Brown St. by means of sewers on Scott, Taylor, Tyson and Isaac Sts., also the blocks on George, Frank and May Sts., and to place outlets at the foot of Isaac, Tyson and Taylor Sts., as per McDowall's plan marked appendix "A."

Thus it will be seen that the proposition is to run the untreated sewage by 5 pipes, each in size as follows: 8 in., 12 in., 15 in., 15 in., 24 in., into the harbor.

As the municipality has for the past four years been supplied with drinking water pumped from Colpoy's Bay, the question naturally arises, what effect the emptying of untreated sewage from five different outlets would have upon quality of the same?

Upon examination and inquiry, I found that both the intake and pump house had been removed to sites farther to the east along the north shore of the bay, to a point 4,400 feet east of Division St., without the boundaries of the municipality, as per appendix "B." It was also found that the prevailing current is from the east along the north shore, and from the west along the south shore of the bay, but at times it may possibly be in the reverse direction, in which case the sewage might find its way in the intake pipe, which is at present only some 50 feet from shore, in not more than 14 feet of water, and the waters of the bay are always cool—a condition which would tend to retard the disintigration of fecal and other matter.

I am of the opinion this intake should be carried out into deep water, and the mouth of the same properly protected.

Again, towards the western end of the harbor and at a point along the north shore, there are large quantities of either logs or railway ties, which would do much to retard the egress of raw sewage, and materially aid in creating nuisances, from time to time.

The location of the Beet Sugar Factory on the opposite side of the harbor must be considered, if that industry is ever revived, for an examination of the premises revealed the fact that in the past the sewage simply overflowed on to the shore, the liquid portion reaching the water, and the more solid remaining on the land, where even at the present time it is a nuisance to the neighborhood, although the factory has been inactive for some time. By requiring the company to instal a septic tank and provide for filtration of the effluent, would be simply asking them to provide a sanitary necessity.

The proposal to discharge the untreated sewage at five points into the harbor, I cannot endorse, but would suggest that as a necessity exists for the providing of sewers for that portion of the town, which would empty into the harbor at the foot of Division and Brown Sts., that the sewer be diverted from Division St. under the railway tracks to the intersection of William and Brown Sts., and that a septic tank be constructed at or near the latter point for the treatment of the sewage before being run into the 24 in. pipe, as proposed by the engineer. The tank should be of such capacity as to contain the daily outflow of the portioned sewered in this manner. The capacity of the tank can be extended, as either the sewers are extended or the house connections are increased.

In regard to the sewers which it is proposed in the plan to empty at the foot of Taylor, Tyson and Isaac Sts., one common exit should be constructed and treatment provided for as suggested at the foot of Brown St.

Should it be deemed necessary by the Provincial Board in the future that further treatment of the sewage is required, then the town must be prepared to provide for the same.

In addition to the foregoing provisos, it is necessary that the Council pass a series of Plumbing By-laws similar in character to the Model Plumbing By-laws approved by the Board, February 11th, 1897, and provide an inspector to supervise and enforce the same.

All of which is respectfully submitted.

CHAS. A. HODGETTS,
Secretary.

Toronto, August 22nd, 1904.

Report No. 15, 1904, of the Committee on Sewerage re Rat Portage Extensions.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—Your committee having carefully considered the application made by the Corporation of the Town of Rat Portage, for the construction of sewers on Argyle, East, Second and contiguous streets, the outlet of which would be in Laurenson Creek, and reviewed the statements of the petitioners against the scheme, together with the report of the Secretary on the proposal.

Your committee would recommend that the Board do not approve the emptying of the sewage into Laurenson Creek.

All of which is respectfully submitted.

WM. OLDRIGHT.
ALEX. THOMPSON.
CHAS. A. HODGETTS.

Rat Portage Sewerage Extensions.

DR. CHAS. A. HODGETTS, M.D.

To the Members of the Committee on Sewerage:

GENTLEMEN,—Upon August 9th an application was received from the Town Clerk asking for the approval of plans for the construction of sewers on East Third, East Fourth and East Second, Julius and Argyle Streets. The chief objects to be sought were the proper draining of the public school, which accommodates some four or five hundred children, and the removal of the surface water from the site of the proposed public park, which for many years has been a muskeg of the worst type. The construction of the extension will also afford sewerage advantage to some thirty families at present living in the district. The proposed outlet as per plans submitted is in the deep water of the Laurason Creek, which flows at the foot of Argyle Street.

A petition having been received signed by Mr. Longley and other of the residents living along this creek, a personal investigation was made on November 2nd last. Before inspecting the ground an inquiry was held in the Town Hall, when two of the petitioners appeared and stated their objections. Both ratepayers have been living for some years on the south side of the creek on lots to the left and right of the Government Road, just after it crosses the Argyle Street Bridge, and their properties extend down to the creek.

Mr. Longley stated that during the past ten years the creek has been gradually filling up with wild rice and other vegetation. The bottom of the creek is muskeg, and that he made four float tests and found the flow of the stream was fifteen inches per hour—when made on calm days. He stated that in winter the creek freezes solid below Gold Street Bridge. He stated the water was used for the cattle kept on the south side, as their was no water system on that side, the only supply being in summer time through an inch galvanized iron pipe running across Gold Street Bridge. Both the petitioners claimed that owing to the sluggishness of the stream a nuisance would soon be created along the swampy and muddy banks, a menace to health and a detriment to the value of the surrounding property, and, further, the picturesque beauty of the creek destroyed. Mr. Wait corroborated the statement of Mr. Longley.

In company with Mayor Horswill, the Town Clerk and Enginer, and the two petitioners, a visit was made to the school and the route of the sewer gone over together, and an examination made into the condition of the creek and its surroundings.

The school is a new structure with a daily attendance of over four hundred pupils. In the basement are situated the closets, nine for the girls and seven for the boys. They are what are known as the trough latrines. There is also a large urinal for the boys. From the school the sewer runs along the four sides of the lot set apart for the public park which, up to the construction of the sewer, had been a muskeg. The main sewer runs down Argyle Street to a point close to the creek, at which point construction has been stopped pending a decision of this Board, and, further, no house connections have been made. The creek is about 150 feet wide, though the bed of the creek is very much grown up with wild rice, &c. This is particularly noticeable above the bridge, where are also to be seen floating muskeg. Below the bridge the banks are dirty and upon many of the lots between Argyle and Gold Street Bridges are situated closets and stables. From Gold Street Bridge the condi-

tions are not at all improved, and at the lumber yards it flows through slab banks about twenty feet wide, running thence into the Lake of the Woods through booms of logs. I particularly noticed the very undesirable manner in which Mr. Longley was filling in his lot, and from the character of the material now there I am of the opinion he is creating a nuisance which should be abated. The reasons given by the Mayor and Town Engineer for the plan as submitted may be briefly stated as follows:

(a) The oft expressed desire of the Board of Education for the installation of sewers whereby the school closets could be utilized, the present earth closets being a constant nuisance and menace to the health of the children.

(b) The impossibility to carry a sewer in any other direction except it might have been through the C. P. R. property, but here again the fall was only slight, and the company placed such conditions around the granting of the request that the corporation found it impossible to comply therewith.

(c) The waterfall of the district is in the direction taken by the sewer, and to carry it to the west along the side streets would be impossible at the present levels of the existing sewers, and in most cases rock intervenes.

Conclusion. The proposal to empty sewage into the creek should not be approved.

All of which is respectfully submitted.

CHAS. A. HODGETTS.

Report No. 16, 1904, of the Committee on Sewerage re Tillsonburg Laundry Nuisance.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—Your committee having considered the report made by Dr. Amyot upon the above mentioned nuisance, would recommend that the report be adopted.

All of which is respectfully submitted.

WM. OLDRIGHT.
ALEX. THOMPSON.
CHAS. A. HODGETTS.

Report with Reference to Complaint of Nuisance in Connection with a Chinese Laundry in the Town of Tillsonburg.

A visit was made to the town at the request of the Town Council on October 29, 1904.

The building occupied by the laundry people complained of is owned by the widow of the late Dr. Sinclair, and is second from the southeast corner of Broadway and Baldwin St., on Broadway. A drain pipe leads from the washroom at the back of the house to the end of the lot, about 120 feet away, where it empties into a pit bricked up but uncemented, and situated in a very light gravelly soil, about 10 feet deep, on a hard-pan. When the contents accumulate it is pumped out and carted away. Often, though, it overflows on the surrounding lots before this is done. There are wells within 20 feet of it. None of the privies in the neighborhood are any too clean, either. All this is dangerous to the well water.

There is no sewerage system in the town. There are a few surface (box drains). Some of the residents, it is complained, are using these for sewage draining purposes. The difficulty with the laundry could be overcome by having the waste emptied into a sufficiently large watertight tank, roofed over.

There is a very fair water supply in the town, for drinking purposes at least. The people in the neighborhood should be recommended to use this in place of well water, as at present.

Yours respectfully,

JOHN A. AMYOT.

Report No. 17 of the Committee on Sewerage re Port Hope Extension.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—Your committee would report as follows on the application of the Corporation of the Town of Port Hope, for the approval of the plan to construct sewers on John and Augusta Streets in that town:

Your committee recommend that the same be approved, subject to the same provisos as set forth in the resolution of the Board, May 7th, 1897, November 12th, 1897, and August 15th, 1900, and is of the opinion that the Board should be put in possession of all possible data regarding the estimated present volume of water in Smith's Creek, and the conditions consequent upon the emptying of the sewage into the same, and would recommend that an inspection be made by one member of this committee at an early date.

All of which is respectfully submitted.

Signed,
WM. OLDRIGHT.
ALEX. THOMPSON.
CHAS. A. HODGETTS.

Toronto, Nov. 11th, 1904.

Report No. 18, 1904, of the Committee on Sewerage re Stratford Sewage.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—Your committee having had the reports of Dr. Amyot and Dr. Hodgetts, upon the sewerage of the City of Stratford, desire to express the pleasure they feel upon learning of the construction of the new septic tank, of a capacity of 750,000 gallons, whereby the purification of the sewage will be greatly improved.

Your committee would recommend the adoption of those sections of the above reports which refer to the sewage of the city.

All of which is respectfully submitted.

ALEX. THOMPSON.
WM. OLDRIGHT.

Report on Inspection of Stratford's Sewage Disposal Plant.

Made on June 1st, 1904.

By J. A. AMYOT, B. A.

The visit was made at the request of the Mayor of Stratford.

The quantity of sewage to be disposed of averages daily about 750,000 gals., and is chiefly "domestic."

Additions have been made to the plant since last year. Two new coke beds have been added. The brick bed has been filled in with coke. A cinder bed has been substituted for one of the former ones (the cinders are packed though). In addition fine broken stone has been substituted for sludged coke. There are nine beds in all now, and they seem to be doing as well as contact beds usually do. They have applied very good distributors to each of their beds, thus giving a much evener distribution of the sewage than formerly. They have added one large septic tank to their previous small one (25,000), the new one having a capacity of about 175,000 gals. It is an uncovered tank. The odor was not offensive around it. Analysis during the week previous to my visit of the sewage going in and out of their septic tank showed an organic matter removal of 40 per cent. The beds showed about the same removal of what was still left. They are preparing to extend especially the septic tank to double its present capacity at least. A great deal of storm water gets access to their sewers. This makes it difficult to calculate on the capacity required of their apparatus. One of their great difficulties, and the one from which comes the most complaint, is the sewage from the "Packing House." On two days a week killing is done there, and during these days a

great deal of blood and organic washings get into the sewers. The blood even arrives at the sewage disposal plant still red. On each of these days about 15,000 gals. of this sewage is poured into the sewers, and when it putrifies becomes very offensive. There are two small settling tanks for this sewage in connection with the institution. They are too small to dispose of their waste, though they do well enough as fat collectors and catch basins of the very heaviest solids, but let a great quantity of solids into the sewers, and this untreated (the capacity of the tanks being insufficient to give the requisite time for decomposition). Their effluent is about 1,000 gals. per hour for 15 hours a day at least. On two days this is made up of extremely concentrated organic matter; on the other days it is passable.

In my opinion it is necessary that these effluents, under the circumstances, be considered separately. A tank of 15,000 gals. capacity to be used on days other than slaughtering days to give a 24 hours treatment to their sewage. That for slaughtering days sewage a tank of 30,000 gals. capacity, or equal to the product of these two days be constructed and this sewage held until next slaughtering day, or better still that this slaughter day stuff be treated in a preliminary manner by chemical methods. Of course it will need vent. A pipe or shaft leading up to the roof would probably do all this. The ideal method would be to mix all the week's sewage to get more dilution, and to hold it for this time. The tankage cost would probably be prohibitive.

After examination of the disposal plant we walked down the river for nearly a third of a mile. I think there is room for complaint that far at least. The water smelled of sewage and was turbid. The quantity of water running at the time in the river would probably be somewhere about 15,000,000 gals. per 24 hours, and this was wet weather. On the same day I visited the water works I could not get any exact information as to the quantity pumped, probably 600,000 gals. per day. The source of the water is the River Avon above the city. The river here runs through farm land in a shallow valley, a good deal of it swampy and springy. Cattle were pasturing to the edge of the water. The reservoir is of small capacity, probably 250 ft. long pear-shaped, about 40 ft. wide at its widest diameter, and about 3 or 4 ft. deep. The bottom is coarse gravel. The water is screened through a bank of boulders, and gravitates to the pumping station. If it were ever infected above there is nothing to prevent the infective agents going right into the city taps. They are running a great deal of risk. Mr. Chipman has under consideration some plans for their water supply. He visited there some days after me. We have since sent some twelve bottles for samples of the water. They have not been sent in to us yet.

Report No. 19, 1904, of the Committee on Sewerage, re Pollution of the Grand River by the Galt Sewage.

To the Chairman and Members of the Provincial Board of Health:

Gentlemen,—Your committee having heard the statements made by Mr. Telfer, who appeared before the Board on behalf of certain petitioners resident in the Township of North and South Dumfries, who regard with disfavor the system of sewerage for the Town of Galt, which was approved by this Board in November, 1903, and having considered Dr. Amyot's report thereon, would recommend that as the Corporation of the Town of Galt is now constructing the system, no action is deemed necessary by the Board, until the same has been put into operation.

All of which is respectfully submitted.

Wm. Oldright.
Alex. Thompson.
Chas. A. Hodgetts.

Re Stratford Water Supply and Sewerage System.

By CHAS. A. HODGETTS, M.D., and JOHN A. AMYOT, M.D.

In continuation of the report presented by Dr. Amyot at the last quarterly meeting, we beg to state that a further investigation into both the systems was made on 22nd September last.

After a careful examination of the ground and the various streams from which it is proposed to collect the water supply, together with their environments, we are of the opinion that not only will a sedimentation basin be required, but to insure to the inhabitants a supply of pure water the municipality should be required to filter the same, bringing it to such a standard of purity and maintaining it at the same to the satisfaction of this Board. If the supply from the proposed enlarged collecting area is not sufficient for the wants of this growing city the water in the lake may have in the future to be looked to for supplying the increased demand.

From the large amount of dairying carried on in the district through which the various springs flow, it will be a most difficult matter to prevent for all time a contamination of the waters, even if the shores are protected, there will follow after every heavy rainstorm polution from the surface washing from barnyards and pasture lands. A regularly organized system of patrol of these streams will be necessary.

Regarding the treatment of the sewage, we are pleased to state that the septic tank of a capacity of 750,000 gallons was nearing completion, and an examination of the river below the same would lead to the belief that land of a suitable character may be found which would permit of the sand treatment by the effluent.

We also examined the seweage from the pork packing establishment, and found that the same is run direct from the factory without any attempt at treatment. As complaints have repeatedly been made regarding the nuisance created by the same, we would suggest that the corporation require the company to adopt a suitable system of treatment forthwith of this unsatisfactory waste, whereby impurities may be removed after which it could be permitted to be run into the general sewerage system.

All of which is respectfully submited.

CHAS. A. HODGETTS.
J. A. AMYOT.

Stratford Water—Sent by Dr. Robinson of Stratford.

Laboratories of the Provincial Board of Health,
Toronto, August 22, 1904.

Report on water samples sent by Dr. Robinson of Stratford, and received by us on August 9th, 1904. Analyses were begun on the same day:

Laboratory numbers.	Senders' numbers.	Where collected from.	Strepto-cocci.	Staphy-lococci.	Colon bacilli.	Colonoid bacilli.	Chlorine in parts per million.	Remarks.
2370	1	Waterworks tap.....	None	None	Present	None	3	
2371	2	Filter basin	None	None	Present	None	2	
2372	3	Collins' bridge	Present	None	None	Present	2	
2373	4	Poff's bridge.....	None	None	Present	None	3	
2374	5	Blue Springs	None	None	Present	None	3	
2375	6	Collins' bridge	Present	None	Present	None	2	
2376	7	Trow's lake	None	None	Present	None	4	
2377	8	White Packing Co....	None	None	None	Present	2	
2378	9	Kemp's well	None	None	None	None	2	
2379	10	Mooney's factory.....	None	None	None	None	1	
2380	No No.	No mark.....	None	None	None	None	1	

No. 2376 shows increase in chlorine over the normal for a surface water in that district. The increase is probably due to drainage from animal sources.

Nos. 2372 and 2375 show streptococci, a form of disease producing bacteria not found in normal waters. They indicate animal pollution.

Nos. 2370, 2371, 2373, 2374, 2375 and 2376, show colon bacilli, intestinal bacteria, and indicate animal pollution.

Nos. 2372 and 2377 show a form nearly allied to the colon bacilli. They are regarded as suspicious of animal pollution.

Nos. 2378, 2379 and 2380, are good waters in so far as the bacterial examination can tell.

The first eight specimens are doubtful waters. They would not be safe to drink without a very high efficiency filteration.

JOHN A. AMYOT, M.B.,
Director of Laboratory.

Report with Reference to Petition Presedted to the Board by Certain Residents of the Township of Dnmfries Against Pollutton of the Grand River by the Town of Galt.

By J. A. AYMOT, M.D.

On October 26th, 1904, a visit was made to Galt at the request of a committee of residents of the Township of Dumfries, living in the neighborhood of the Grand River below the Town of Galt. In company with Mr. John Gillespie, one of the committee, an inspection of the Grand River through and below the town was made. There is no general sewerage system at the present time. One sewer along Main street empties at the foot of the street into the river, after going through a septic tank of small capacity, (was not able to get at its dimensions). There is one also on the opposite side of the river. All the factories situated within reach of the river empty their effluents without treatment directly into the river. The most objectionable are a woollen mill, a plush mill (giving much dye liquor), and a small tannery.

The town has in process of construction a main sewer along the east and also one along the west banks of the river, to a point below the southernmost boundary of the town. At the end of these main sewers they propose putting a 60,000 gal. septic tank, and then to collect from both into a reservoir, and from this perhaps apply to coke beds. A search was made south of the town for sand or gravel beds suitable for sewage disposal, and none of a suitable nature was found except on the west bank of the river just below the water works. The town water is artesian and driven well in origin. Sewage disposal in the neighborhood is hardly safe.

At a meeting of the committee afterwards it was stated that the town was pumping 450,000 to 500,000 gals. of water per day. The dry weather flow of the Grand River at a point below the town was stated to be about 10,000,000 gals. per day. They thought that the quantity of sewage would reach in the neighborhood of 400,000 gals., and that this would be mixed with the Grand River in too great quantity for safety. Then they were under the impression that the town was going to put in merely a 60,000 gal. tank, and no other method of treatment. I assured them that the question would be looked into and that the Board would see to it that Galt should so treat its sewage that it would be no nuisance to them, or at any rate would help them to see that such was done. After my meeting with them I was seen by the Sewage Committee of the Galt Council, in company with their engineer, Mr. W. M. Davis.

Their plan is to place right now two tanks, one each side of the river, of 60,000 gals. capacity each, in all 120,000 gals. That they have estimated that the quantity of sewage could hardly equal this in the next three years anyway. They don't expect to sewer the whole town for some years yet. That the present sewer is only a part of the future system, and that it will hardly be added to in the next three years. They feel very sure that the quantity of sewerage discharged will not exceed 120,000 gals., and this after gathering very complete data. They have not planned for the time being for any further treatment of the sewage than the septic tank treatment, but are prepared to put in coke beds to further treat the effluent. Mr. Davis assured me that after faithful search he was unable to find a suitable soil for miles below the town on which intermittent sand-filtration could be done with a chance of success. There is considerable gravel, but it is imbedded in a very clayey sand. I was able to verify this to the full as far as I went below the town. I beg to append the petition to the Board with reference to this question.

Yours respectfully,

Toronto, Nov. 9, 1904. JOHN A. AMYOT.

Analysis of Water.

Laboratories of the Provincial Board of Health,
Toronto, Sept. 28th, 1904.

From Mr. Mahlon Davies, Galt:

No.	Free NH_3.	Alb. NH_3.	Ox. Cons.	Chlorine.	Nitrites and nitrates.	—
(1) 2923	.085	.145	....	6	....	Grand river, at tannery.
(2) 2924	.065	.155	....	7	....	" above C. P. R. bridge
(3) 2925	.055	.130	....	6	....	" at tannery.
(4) 2926	.085	.140	....	6	....	" above C. P. R. bridge.
(5) 2927	.050	.150	....	7	....	" at tannery.
(6) 2928	.035	.150	....	6	....	" above C. P. R. bridge.

JOHN A AMYOT.

Report No. 20, 1904, of the Committee on Sewerage re Palmerston Pork Packing Nuisance.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—After a due consideration of the statements received by the secretary, and of the report made by him after an examination into the existing conditions of affairs, whereby the water of the creek flowing past the factory and through the pasture lands of the Township of Minto, is polluted by the sewage from the above mentioned factory, your committee would recommend that the suggestion contained in the report of the secretary be approved.

All of which is respectfully submitted.

WM. OLDRIGHT.
ALEX. THOMPSON.
CHAS. A. HODGETTS.

Report re the Palmerston Pork Packing Establishment.

By CHAS. A. HODGETTS, M.D., Secretary.

Complaint having been made that the proprietor of this establishment was creating a nuisance in the Township of Minto by running the sewage from the works into the creek which flows through the municipality, the water of which is used by the farmers for watering their cattle, I took the opportunity when in Palmerston to enquire into the same.

The chief complainant is Mr. S. Laybourne, who owns the farm nearest to the factory. He states that in the killing days the water of the creek is discolored with blood, and that at times the odor arising from it is very disagreeable. A part of his farming is dairying, and the cattle drink the creek water, and his milk has been refused by the Cotswold Cheese Factory.

I found the water of the creek discolored and the banks showing every evidence of the decomposition of the effluent from the factory, and at a point over a mile from the factory where the bridge crosses the stream, and some obstructions existed just below, a collection of sewage was undergoing septic action, and the condition of the creek and the banks was most unsanitary.

Through the kindness of Mr. J. O. Main, proprietor, I was enabled to make an examination of the premises and examine into the method of the disposal of the waste and sewage. The factory has a capacity of 1600 to 2000 hogs per week, and the engines pump from twenty to twenty-four thousand gallons of water each day, this supply being derived from a large gallery close to the factory and adjacent to the creek into which the sewage empties, the source evidently being derived from the surface water which filters through the surrounding gravel.

On the day of inspection slaughtering had been carried on in the morning, and what was seen was a fair sample of the usual sewage. I was informed that as much of the blood and other waste material was saved after removal of fat for subsequent manufacture into fertilizer, but in this regard as much care in saving the blood, etc., was not shown as in other similar factories I have inspected.

The sewage, which was blood stained, is run into three roughly constructed wooden tanks, where the coarser materials are deposited, and from the third receptacle flows constantly into the creek, which at this point is somewhat swampy. No effort is made at treatment, and as a consequence the nuisance is greater down the creek than it is in the immediate vicinity of the factory, chiefly from the fact that decomposition of the waste materials is greater at the more remote point, especially at the pool near the bridge just referred to.

That a nuisance is created by the proprietor of the factory is quite evident, and the same should be abated by him. And further, there is very good reason to believe that it is more than probable that the water in the galley is polluted by the sewage. As the soil is gravelly, there would be no difficulty in the proprietor installing a subsoil drainage system, previously using some preparatory treatment, such as may be obtained by precipitation and septic tank treatment, as determined by experiment, under the supervision of some competent person.

I am further of the opinion that the municipality through which the stream flows is not altogether unblameable in the matter, for if that portion travelled over is a fair sample of the remainder, then the bed of the creek is crowded with large quantities of debris, which has been allowed to accumulate, and thus the natural flow of the water is retarded, and in this particular the township authorities are blameable and should at once cause the same to be cleared away.

Reports of the Committee on Public Water Supplies.

Presented and Approved at the Special Meeting held in the Town of Collingwood, Aug. , 1904, and the Fourth Quarterly Meeting held in the City of Toronto, Nov. 10th to 12th, 1904.

Report No. 4, 1904, of the Committee on Public Water Supplies on the Grimsby System.

To the Chairman and Members of the Provincial Board of Health of Ontario.

GENTLEMEN,—Your committee having considered the report of the secretary, made after a personal examination, would recommend that the said report, together with the recommendations therein contained, and appearing as appendix "1," be approved by the Board.

All of which is respectfully submitted.

R. P. BOUCHER.
CHAS. A. HODGETTS.

Report on the Proposed Water System for the Village of Grimsby.

By CHAS. A. HODGETTS.

To the Chairman and Members of the Committee on Public Water Supplies:

GENTLEMEN,—Having visited the Village of Grimsby and gone over the ground in company with Mr. Chipman, C.E., and representatives of the corporation, I find that the site proposed by the former, for filtering basin or gallery, the most suitable that can be found.

The corporation endeavored to secure water from the heights to the south of the village, but the samples obtained and examined in the laboratory were in every instance unsuitable for domestic use.

It is proposed by the engineer to make the wall of the filtering basin on the land side impervious, and from the character of the beach in the immediate vicinity it is evident the filtering medium is of the best.

At the present time the lake level is very high, and what is now a marsh to the south of the sand bar has for some years been under cultivation, and the exit of the creek has been altered from the eastern to the western end of the beach. It is proposed however to rectify this by dredging at the site of the old channel in the east.

The corporation is about to acquire several acres in the immediate vicinity of the proposed filtering basin or galleries. In view of the fact that considerable fishing is carried on along the shore, and up to the present the fishermen dispose of the fish offal by throwing it either into the water or on the shore, I would recommend that the village council pass a by-law prohibiting the same under penalties, and that the same be a condition under which this Board approves of the scheme.

It should be further understood that this Board must be satisfied as to the potability of the water, before finally approving of the same.

The commendable enterprise and public spirit of the ocrporation of the village of Grimsby cannot be passed by unnoticed, for a village of only a thousand persons to decide upon expending some $34,000 for a system of waterworks, indicates the impor-

tance the ratepayers place upon the supply of good drinking water, and with a large reservoir on the ridge to the south, there is every possibility that the benefits may extend to the large number of farm houses in the immediate vicinity.

Respectfully submitted,

CHAS. A. HODGETTS.
Secretary.

Report No. 5, 1904, of Committee on Water Systems re Thamesville System.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—Your committee, after a careful consideration of the plans prepared by John Galt, C.E., also the report of Dr. Hodgetts and Dr. Amyot, who have gone over the ground, would recommend that the plans be adopted subject to the provisions set forth in the report, and would further recommend that the wells shall not be located too near the creek, and that borings should be made for the purpose of obtaining samples, which samples must be satisfactory to the Board.

All of which is respectfully submitted.

W. J. DOUGLAS.
CHAS. A. HODGETTS.

Report on Thamesville Water System.

By CHAS. A. HODGETTS, M.D., and JOHN A. AMYOT, M.B.

To the Committee on Water Supply:

GENTLEMEN,—The proposition of the Council of the Village of Thamesville is to secure a supply of water by sinking a circular steel crib perforated at the bottom, in the gravelly soil to the east of the village, and in this manner supply the public from an underground storage basin. The plans have been drawn up by John Galt, C.E.

We beg to report having visited the village and gone over the ground situated to the east thereof, where it is proposed to sink the steel crib. We find the ground is gravelly, as represented by the engineer. A stream flows close to the proposed site, which is on the outskirts of the municipality. We inspected the well at the electric light power house and found it to be not more than ten feet deep. We were informed that it had not been used since the spring freshets as it had become impregnated with earthworms, and was not now in use.

The site of the gravel pit was visited for the purpose of ascertaining the character of the formation.

Information was also obtained regarding the location of the wells from which samples had been taken and reports upon which are appended.

We are of the opinion the plan suggested by the engineer is an admirable one in some respects, and well suited to the district, but, on account of the shallowness of the wells, there is and ever will be a possibility of contamination of the same unless the municipality secures either sufficient land around the steel basin, or crib to prevent this contingency, and provides some means for the filtration of the water.

Again, we would suggest that some system for the disposal of the sewage of the village be submitted before any final approval of the system of waterworks be passed upon by the committee.

All of which is respectfully submitted.

CHAS. A. HODGETTS.
(Signed), JOHN A. AMYOT.

(Appendix .)

Report on Waters Sent by Dr. Beckett, of Thamesville.

And Received by Us on August 12, 1904. Analyses Were Begun Same Day.

Toronto, August 25, 1904.

Laboratory numbers.	Sender's numbers.	Where Collected From.	Strepto-cocci.	Staphylo-cocci.	Colon bacilli.	Colonoid bacilli.	Chlorine in parts per million.
2411	5	East side village.....	present	none	none	none	10
2412	13	East side village.....	none	none	none	none	13
2413	29	Creek at n.e. side.....	present	none	present	none	48
2414	12	Town Hall, centre of village	none	none	none	none	67
2415	14	School house, west side.....	none	none	none	none	20

Nos. 2413, 2414 and 2415 show a considerable increase of chlorine over the normal for the district. This shows pollution from probably animal sources.

Nos. 2411 and 2413 show infection with streptococci, disease producing bacteria. These bacteria are derived from animal sources. Water suspicious.

No. 2413 shows also colon bacilli, intestinal bacteria. This water shows pollution and double infection, and is a dangerous water.

No. 2412 is probably all right.

(Sgd.) JOHN A. AMYOT.

Report No. 6, 1904, Committee on Water Systems re North Bay.

(New Source.)

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—Your committee beg to report having reviewed the plans and reports of Engineer L. O. Clark, whereby it is proposed to secure to the inhabitants of North Bay a supply of pure water from Trout Lake, instead of from the present source, Lake Nipissing. We have further considered the report of Dr. Amyot on the bacteriological examination of the samples submitted, and the verbal report of one of the members who has personally inspected the place.

We would recommend that the system be approved, as suggested in the report of the secretary.

All of which is respectfully submitted.

W. J. DOUGLAS.
CHAS. A. HODGETTS.

Report on Waters Sent by L. O. Clark, C.E., North Bay.

And Received by Us on September 7, 1904. Analyses Were Begun on the Same Day.

Laboratory numbers.	Senders' numbers.	Where Collected From.	Strepto-cocci.	Staphylo-cocci.	Colon bacilli.	Colonoid bacilli.	Chlorine in parts per million.
2686	42 1	Trout Lake.....	none	none	none	present	1
2687	13 2.	Trout Lake.....	none	none	none	present	1

Both of these waters show organisms that are suspiciously disease producers. They are very closely allied to the colon bacillus, an intestinal bacterim. The water is not satisfactory.

JOHN A. AMYOT.

Report on Waters Sent by Dr. Ranney, M.D., North Bay.

And Received by Us on September 24, 1904. Analyses Were Begun on the Same Day.

Laboratory numbers.	Senders' numbers.	Where collected from.	Strepto-cocci.	Staphylo-cocci.	Colon bacilli.	Colonoid bacilli.	Chlorine in parts per million.
2866	1 30	Well, Joe Marshall	present	none	none	none	80
2867	2 5	Well, Joe Imshon	none	none	none	present	20
2868	3 44	Well, D. Imshon	none	none	none	present	24
2869	4 45	Well, N. Quirt	none	none	none	present	24
2870	5 3	Intake	none	none	none	present	1
2871	6 28	Pumping station	none	none	present	none	1
2872	7 31	Stand pipe	none	none	none	present	1
2873	8 57	A town tap	none	none	present	none	2
2874	9 49	Trout Lake	none	none	none	none	1
2875	10 71	Trout Lake	none	none	none	none	1

Nos. 2866, 2867, 2868 and 2869, show increase of chlorine above the normal. There is pollution here.

No. 2866 shows streptococci, an indication of recent sewage pollution, and in the light of the chemical showing should be considered dangerous.

The other three of these show suspicious organisms. Adding to this the increased chlorine, they also should be regarded with considerable suspicion.

The intake and standpipe waters both show suspicious organisms.

The town tap waters show undoubtedly harmful organisms.

The Trout Lake samples are all right, both chemically and bacterially.

Report No. 7, 1904, Committee on Water Systems re East Toronto.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—Your committee, after considering the plans and specifications submitted by Mr. John Galt, C.E., by which it is proposed to supply the Town of East Toronto with water taken from Lake Ontario, at a point 1800 feet from the beach, at the foot of Beach Avenue, at a depth of 22 feet, and after receiving a favorable report on samples personally taken by Dr. Amyot, would recommend that the same be approved by the Board.

All of which is respectfully submitted.

W. J. DOUGLAS.
CHAS. A. HODGETTS.

Toronto, November 9, 1904.

Report with Reference to Proposed Water Supply to the Town of East Toronto from Lake Ontario.

A visit was made on August 30th, 1904, at the request of the Water Committee of the Town Council of the Town of East Toronto.

The proposed site of the intake is 1700 feet out from shore, at the foot of Beach Avenue, situated between Balmy Beach and Kew Beach. The pumping station is to be situated near the lake shore at the foot of this same street, the water to be pumped into a settling basin and thence to the town, 280 feet above the lake at its highest point.

The cottagers on both of the beaches use earth closets. There are no sewers entering into the lake in the neighborhood. They say the prevailing currents and winds are from the east towards Toronto.

From 900 feet out to 1700 feet samples were taken every 200 feet, 5 samples in all. The results of the analyses are appended.

Yours respectfully,

JOHN A. AMYOT.

Reports on Water Collected by Dr. John Amyot, off Balmy Beach, Lake Ontario, on Aug. 30, 1904, at the Proposed Site for East Toronto Intake.

Laboratory numbers.	Senders' numbers.	Where collected from.	Strepto-cocci.	Staphylo-cocci.	Colon bacilli.	Colonoid bacilli.	Chlorine in parts per million.	Remarks.
2630	2	1,700 feet from shore....	none	none	none	none	9	.....
2631	3	1,500 feet from shore....	none	none	none	none	8	.....
2632	1	1,300 fee. from shore....	none	none	none	none	8	.....
2633	5	1,100 feet from shore....	none	none	none	none	8	.....
2634	6	900 feet from shore	none	none	none	none	7	.....

Bacterially these waters are beyond question. The variations in chlorine show the effects of currents. It is quite possible that the farthest one out shows the effect of Toronto drainage.

It is higher than at Toronto's intake (4 first are).

JOHN A. AMYOT.

Report No. 8, 1904, of the Committee on Public Water Supplies, re Creemore.

To the Chairman and Members of the Provincial Board of Health:

GENTLEMEN,—The Board having already approved of the proposed system of water works for the Village of Creemore, under conditions contained in Report No. 2, 1904, of the committee, it begs to submit the report subsequently made thereon by the secretary, with recommendation.

All of which is respectfully submitted.

W. J. DOUGLAS.
CHAS. A. HODGETTS.

Re Proposed System of Public Water Supply for the Village of Creemore.

The village has a population of between 700 and 800 persons, and is situated in a valley through which flows the Mad River.

The hills to the southwest of the village rise somewhat precipitously to the height of over 400 feet, and from springs to be found in this direction it is proposed by Mr. J. Galt, C.E., to drive the water necessary to supply the village.

The "Gathering Basin" will be located at a convenient spot close to the springs south of the side road, if the flow is found to be adequate. If not, then at the point indicated in the plan, which is 300 feet above the line of Mill Street.

From this basin the water will be conveyed by iron pipes to a concrete storage reservoir, a little to the east of the concession line, and situated at an altitude of 200 feet above Mill Street, and the supply will be by gravity to the village.

The engineer's estimate of the daily flow of the springs situated to the south of the side line, is 60,000 gallons, but can be largely augmented by springs to be found a few rods further up the hill, or by going north of the road and placing the gathering basin further down the valley a still larger daily supply can be obtained.

To preserve the water from contamination at the springs will be a much cheaper and better plan than it would be were the gathering basin located as indicated.

I would therefore suggest that further investigation be made by the engineer in charge, with a view to ascertaining the possibility of securing sufficient supply from the springs to the south of the side road, as if this were done sufficient land could be obtained at small cost to safeguard pollution by reason of cattle pasturing in the vicinity, while to do the same at the site of the proposed "Gathering Basin" would entail a much greater expenditure of money, and owing to the precipitous slope of the surrounding land, pollution might at times take place, especially on the occasion of heavy rain falls, when the surface washings might find their way into the basin from some distance. And in this case it might be found later that filtration would be required before the water is piped to the storage reservoir. The expense on this account, however, would not be great, as sufficient material is provided in the natural formation of the neighborhood, which is gravel.

Appended is Dr. Amyot's report of the samples submitted to him by the engineer, and his remarks thereon.

The presence of colon and other bacilli is readily accounted for, from the fact that at present cattle roam at large along the whole line of the springs and creek, but the quantity of chlorine present indicates a first-class quality of water, provided this contamination is guarded against.

If the points as indicated are safeguarded there can, I am sure, be established by the municipality a model gravitation water works system, and one which will prove of lasting benefit to the charming little village.

All of which is respectfully submitted.

Chas A. Hodgetts.

LIBRARY
AUG
17
UNIVERSITY OF TORONTO

RA
185
06B18
1904
Biological
& Medical
Serials

Ontario. Dept. of Health
Report

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY